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THE EFFECTS OF WORD-RELATEDNESS ON LEARNING.

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THE PURPOSE OF THIS RESEARCH WAS TO EXAMINE THE EFFECTS OF SEVERAL MEASURES OF WORD-RELATEDNESS ON SEVERAL VERBAL LEARNING TASKS--PRIMARILY PAIRED-ASSOCIATES LEARNING AND VERBAL DISCRIMINATION LEARNING, WITH INCIDENTAL ATTENTION GIVEN TO FREE RECALL AND SEMANTIC GENERALIZATION. THE STRATEGY WAS TO SELECT A SAMPLE OF WORD PAIRS (240 COMMON NOUNS ARRANGED INTO 120 PAIRS TO REPRESENT A VARIETY OF JUDGED RELATIONSHIPS) AND THEN TO STUDY THESE PAIRS EXTENSIVELY IN A VARIETY OF EXPERIMENTAL TASK SITUATIONS. PAIRED-ASSOCIATES LEARNING AND VERBAL DISCRIMINATION LEARNING SCORES WERE DETERMINED IN TWO EXPERIMENTS. THE INTEREST WAS IN ACHIEVING A STABLE SCORE FOR EACH PAIR. TO DO THIS A GROUP STUDY-TEST PROCEDURE WAS DEVELOPED AND USED WITH APPROPRIATE MINOR CHANGES IN BOTH EXPERIMENTS. EACH PAIR APPEARED IN FIVE DIFFERENT 60-ITEM LISTS. EACH LIST WAS PRESENTED TO AN INDEPENDENT GROUP OF SUBJECTS FOR THREE TRIALS. THE LEARNING TASK SCORES WERE CORRELATED WITH ALL OF THE VARIABLES DESCRIBING ASPECTS OF THE STIMULUS MATERIAL. THE MAJOR INTEREST WAS IN COMPARING THE PATTERNS OF CORRELATION FOR THE TWO EXPERIMENTS. SEVERAL MAJOR DIFFERENCES WERE FOUND. PAIRED-ASSOCIATE PERFORMANCE CORRELATES SUBSTANTIALLY WITH THE MEASURES OF DIRECT ASSOCIATION WHILE VERBAL DISCRIMINATION PERFORMANCE CORRELATES NEAR ZERO. THE GENERAL CONCLUSION IS THAT PROPERTIES OF THE STIMULUS MATERIAL PLAY VERY DIFFERENT PARTS IN THE TWO TASKS. (AMM)

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SECTION I

Introduction

The study of simple learning using the techniques of rote verbal learning has a long history as an active enterprise. The number of research studies appearing in the literature continues to increase in pace. One sign of the increasing maturity of this aspect of psychology is the number of books and contributed chapters which provide theoretical integration of a large number of experiments (1, 3, 12, 28). These investigations can be sorted into two broad groups concerning (a) experimental parameters of the learning situation, and (b) parameters concerning the nature of the stimulus material--particularly the "natural" relationships among words. This second group of variables was examined in the research to be reported below. In all cases this material consisted of words which occur in normal language discourse as opposed to especially constructed nonsense items.

The stimulus variables typically studied in the area of verbal learning have been derived from the properties of words taken separately. Most prominently it has been found that a cluster of interrelated variables has a pronounced effect on verbal learning tasks. Included in this cluster are Noble's various measures of meaningfulness, Thorndike-Lorge word frequency, and ratings of familiarity and pronounceability (All of these are discussed in the general references cited above). A number of these measures have been utilized in the experiments. In addition, a number of direct measures were derived to assess the relationship between the two words that make up each pair of words used to construct the learning lists.

The importance of investigating this property of words can be illustrated by the word-pair "polly-cracker". Looking at these words individually in terms of meaningfulness and the related measures it might be expected that the paired-associates learning of "polly-cracker" would be relatively difficult for subjects. In fact, such a pair would be learned rather quickly--most probably in one trial. The particular relationship of these words in the natural language, perhaps because of the appearance in the expression, "Polly wants a cracker", results in facilitation of the learning of this pair. Many other examples could be given of word-pairs that individually are not high in variables known to influence verbal learning, but which prove to be easily learned in actual learning experiments. To the extent that joint properties of word-pairs can be measured directly, such measures may prove to be powerful explanatory devices in verbal learning and verbal behavior.

As well as including the study of word-pairs as units, these experiments depart from the customary strategies in one other important sense. Normally, stimulus material is constructed in the form of several lists, each list containing pairs at one level of the variable being investigated. For example, three lists might be used--one at high, one at medium, and one at a low level of meaningfulness. A subject then learns one of these lists over a series of trials. The number of pairs correctly anticipated on each trial per subject becomes the unit which is analyzed by a variety of statistical procedures. In these experiments, on the other hand, the word-pair is the focus of the analysis. A large number of subjects participated in each study so that a reliable performance score was obtained for each pair. It was these scores which were related to the various rating scale indices and association response hierarchies relevant for that pair. It is important to note, also, that the same items are employed in all of the contexts discussed above. This is a definite advantage in making meaningful comparisons.

Related Research

Numerous attempts to quantify the natural relationships between words are to be found in the recent verbal behavior literature. The most prominent approaches will be reviewed in this section. Particular attention will be given to recent review articles which summarize a good portion of the previous work. The references will not be exhaustive. A complete review would extend far beyond the limits of this report.

Perhaps the simplest and most direct measure is the frequency with which one word elicits another in a free association task. Two words are related if one evokes the other as a response. The magnitude of the relationship can be quantified according to the frequency with which one word elicits the other. This approach led to the systematic and extensive collection of normative data. One of the most complete is that of Palermo and Jenkins (22). Much work has been done using association strength as a variable. The results have not always appeared in the expected direction. Jenkins and his colleagues have demonstrated that pairs composed of low strength associates are learned as fast as pairs of high association strength in a paired-associates task (unpublished studies referred to in (13)).

Much has been learned about the verbal habits of subjects by varying (sometimes slightly, sometimes considerably) the conditions of the task, i.e., using various types of controlled association techniques. Cofer (2) discussed work with several kinds of restricted association tasks. Riegel (24) has collected a large number (sixteen) of types of restricted associations on a large sample of words (two hundred). He has been engaged in a program to describe a system of semantic classes and class-relations. Nunnally and Flaughner (18) have presented work showing that subjects have consistent semantic habits based upon their responses to a restricted kind of association situation--one in which there are binary choices for each item. Each of these variations has added new insights into the association process. Marshall and Cofer (16) have reviewed ten different measures of verbal relatedness based upon association. One of their concluding remarks is, "It is possible that many conceptual relations among words may be measured in terms of associative responses given under conditions of response restriction. Relatively little exploration has been made of this possibility to date, although results obtained so far are encouraging".

In their review Marshall and Cofer (16) cover a variety of other indirect measures of word-relatedness. Three of these indices may be considered as one cluster since they all depend

upon some type of associative overlap. They differ in the specific ways that the separate response hierarchies of the two words are combined to produce the index of overlap. It is not necessary to review the details here. To be added to this list is a measure reported by Garskof and Houston (11). Their index of relatedness is more complex. It takes into account both the number and order of identical elements in the response hierarchies of the two words. Such a refinement does increase the predictive power of overlap indices in other verbal learning studies, but it is quite cumbersome.

Brief mention should be given to other indirect measures which have been proposed. Osgood, Suci, and Tannenbaum (20) have presented a measure of meaning which is a type of relatedness. The D measure expresses the similarity between two words, but has a limitation cited by the authors in the above reference. Two concepts that are denotatively distinct may be in the same location in semantic space. Here are two examples: "hero" and "success"; and "nurse" and "sincere". Flavell (9, 10) has presented several measures including judged occurrence as a predictor of judged similarity. Such a measure has the often quoted difficulty that two concepts such as Indian elephant and African elephant are highly similar, though they never occur together.

In summary, verbal relatedness has been studied with a variety of techniques. Many interesting facts remain to be discovered by examining untried methods.

Organization of this Report

The objectives of this research were: (1) to select a large number of pairs of words using lexical items from the English language. These pairs were judged to embody a variety of relationships between the two member words; (2) to collect rating scale plus free and controlled association indices on the individual words and on the pairs; and (3) to use these pairs in paired-associates and verbal discrimination learning experiments in order to assess the predictive efficiency of the indices obtained in (2).

The next section (Section II) will contain an account of the selection of the basic list of stimulus pairs. This will be followed by a discussion of the scales and association measures along with an outline of the methods employed in assembling the data. In each case the detailed procedures as well as the tables of scaled values and association hierarchies will be included in an appendix attached at the end of the report.

The methods and results of the paired-associates and verbal discrimination learning experiments will be discussed in Sections III and IV. These two types of rote verbal learning procedures will be compared and contrasted in Section V. Particular attention will be given to the contributions of the various stimulus parameters in the two situations. Several related experiments will be presented in Section VI. Two final sections contain the conclusions, implications and summary.

SECTION II

The Pairs, Scales, and Associations

The basic stimulus material was selected to include most of the common nouns in English. There are 240 separate items. These words were formed by the experimenters into 120 pairs representing a variety of possible relationships. A few examples are: (1) "city-town", which represents synonymy, (2) "friend-enemy", as opposites, (3) "grape-vine", where the response item completes the sequence, (4) "hat-coat", contains a stimulus and a response which frequently occur together in space, and (5) "ash-gin", which was judged by the experimenters to be unrelated in any systematic fashion. No attempt was made to include all of the possible ways one word may be related to another. This number is very large (possibly infinite). Most of the commonly used categories are represented by a number of pairs. A listing of the pairs, along with the code numbers that will be used in the remainder of this report, is given in Table 1. The order is alphabetical according to stimulus word.

In the first phase of the project this stimulus material was presented to large groups of subjects (freshmen and sophomores at Vanderbilt University) with instructions to perform a diverse array of rating and association tasks. A brief description of these measures follows. In each case reference will be made to the appropriate section of the appendix where a detailed account of the procedures, number of subjects, reliability data, etc. can be found.

Ratings of the Pairs

Four different dimensions were selected for study:

(1) Similarity of Meaning. Flavell (9) and others have discussed this global rating in theoretical terms; and it has been employed as a predictor in several settings. No specific definition of meaning is given. The instructions contained some examples and a seven-point scale. See Appendix B, Table B-1, Column 1.

(2) Co-occurrence of the Referents. This variable is included as an assessment of a more specific relationship. The question is, "How often do the objects referred to occur together in space?" Flavell (10) has used judged co-occurrence as a predictor of judged similarity of meaning. Thus, the correlations with this scale are of interest as well as the relationship with

TABLE 1

120 Word-Pairs With Identification Numbers

Pair	ID Number	Pair	ID Number
ANTLERS DEER	093	CARPET WOOL	009
APE MONKEY	042	CASTLE HUT	107
APPLE PEAR	100	CHEESE MOUSE	105
ASH GIN	113	CHILD KID	006
ATHLETE INVALID	029	CITIZEN RESIDENT	068
AX HATCHET	019	CITY TOWN	081
BABY BOTTLE	032	CLAW LOBSTER	092
BALL GOLF	007	CLOCK WATCH	038
BANDIT THIEF	104	CLOSET STOREHOUSE	053
BANKER BEGGAR	001	CLOTHING STORE	050
BED LAMP	041	CORN FIELD	114
BEE HONEY	011	COURT TENNIS	119
BOAT LAKE	003	CROCODILE ALLIGATOR	017
BOY MAN	034	CROWD MOD	048
BRICK CLAY	120	CURRENCY MONEY	045
BUG INSECT	055	DAGGER KNIFE	031
BULLET GUN	024	DIAMOND JEWEL	098
BUTTER OIL	030	DOCTOR PHYSICIAN	028
BUTTERFLY WORM	070	DOG CAT	091
BUTTON SHIRT	095	DREAM NIGHT	102

TABLE 1-- Continued

Pair	ID Number	Pair	ID Number
CAR AUTOMOBILE	036	DUST BOWL	089
EAGLE BIRD	033	HAT COAT	035
EMBLEM LABEL	073	HEAD ORGAN	002
ENGINE STEAM	010	HOUR MINUTE	097
FARM BARN	058	JAIL PRISON	079
FIG LEAF	099	JUSTICE PEACE	085
FISH TROUT	040	KING GOVERNOR	075
FOOT SHOE	014	LETTUCE TOMATO	020
FRIEND ENEMY	071	LIBRARY BOOK	057
GARBAGE CAN	066	LION TIGER	110
GENIUS MORON	103	LIP BACON	083
GERM MICROBE	052	LIZARD REPTILE	074
GIANT MIDGET	096	LUNATIC FOOL	023
GIRL SCOUT	080	MILK MAID	116
GLOVE PEOPLE	077	MINNOW WHALE	022
GOD DEVIL	111	MOON STARS	013
GOOSE DUCK	094	MORNING DAWN	061
GRAPE VINE	087	MOTHER SISTER	101
GUN TRIGGER	117	MOUNTAIN HILL	084
HAMMER SAW	025	NEEDLE RECORD	039
HAND FINGER	086	OCEAN SEA	046

TABLE 1-- Continued

Pair	ID Number	Pair	ID Number
HARBOR SHIP	090	ORANGE FRUIT	037
OYSTER SHELL	106	STEP BROTHER	112
PAINT BRUSH	060	STOVE COFFEE	018
PAPER PENCIL	051	STREET ROAD	063
PEARL NECKLACE	059	SUMMER CHURCH	118
PEN INK	008	THUNDER STORM	056
POT PAN	005	TOBACCO SMOKE	108
PRIEST MINISTER	064	TURTLE RABBIT	078
RADIO TELEVISION	109	TYPEWRITER RIBBON	049
RAIN BOW	067	WAFFLE SYRUP	047
RIVER BRIDGE	044	WEDDING RING	027
ROOM CEILING	076	WHISKEY PARTY	065
ROSE THORN	054	WINDOW FROST	072
SAINT SINNER	015	WOMAN SKIRT	088
SALT PEPPER	012	WORKER LOAFER	016
SHEEP MLADOW	082	YOLK EGG	115
SINK KITCHEN	062		
SNAKE PIT	021		
SOAP WATER	004		
SOLDIER RIFLE	026		
SPIDER WIDOW	043		
STAMP ENVELOPE	069		

the learning scores discussed below. See Appendix B, Table B-1, Column 2.

(3) Ease of Learning. Subjects were instructed to rate the ease with which they judged they would be able to learn the pairs if the pairs were presented by the usual paired-associates anticipation method. The major comparison here is with the obtained scores in the experiment. The expectation is that there will be a substantial correlation between judged and actual performance. See Appendix B, Table B-1, Column 4.

(4) Syntactic Co-occurrence. This is one of the specific types of meaning variables that has not been studied. Since nouns are lexical items from the grammar as well as the names for objects, they occur together in written and spoken sentences. This aspect may or may not be highly correlated with the co-occurrence of the referents. Since the words are used in the learning experiments in the printed form (as lexical items), this measure may be important in predicting the performance values. See Appendix B, Table B-1, Column 3.

Ratings of the Individual Words

Four additional rating scales using the individual words as items were administered to independent groups of subjects. A brief description follows:

(1) Meaningfulness. This is perhaps the most basic rated dimension. The instructions used in this scaling were patterned closely after those reported in Underwood and Schulz (28). This reference, cited above, gives a complete and detailed account of the experimental and theoretical implications of meaningfulness. Procedures and results can be found in Appendix A, Table A-1, Column 1.

(2) Imagery. As with the pairs considered above, a global measure is important, but there is also need for more specific judgments. Rated imagery is one such variable. The impetus for its inclusion in this research program was the work of Paivio (21). He studied the paired-associates learning of concrete and abstract nouns using pairs formed of the various combinations of the two types. The concrete-concrete pairs were most easily learned and the abstract-abstract pairs most difficult. Part of the explanation centered around the rated ease with which the words aroused sensory images. Paivio's pairs were limited in the variety of relationships between the two words. In this study rated imagery will be related to the paired-associates and verbal discrimination learning scores for the diverse 120 pairs. See Appendix A, Table A-1, Column 2.

(3) Evaluation. A great deal of research has been inspired by the studies of connotative meaning reported in The Measurement of Meaning (20). This rating of evaluation is designed to assess the dimension that has repeatedly been found to account for the largest proportion of variance in measures of connotative meaning. The essential element of the instructions to the subjects is the request to rate each item on a scale with anchor points labeled "pleasantness-unpleasantness". See Appendix A, Table A-1, Column 3.

(4) Frequency of Usage. Frequency has long been recognized as a potent variable in verbal learning experiments. It is usually obtained from word-counts based on large samples of printed matter, e.g. The Teacher's Word Book of 30,000 Words. (25). Such counts have many problems centering around the nature and datedness of the sample of material to be counted. Such counts are available for the words in the present sample. They will be compared with the rated frequency. The correlation between the two is expected to be high. This may demonstrate an easy and efficient manner of obtaining reliable frequency of usage information. See Appendix A, Table A-1, Column 4. The Thorndike-Lorge frequencies are also included in this table.

Association--Free and Controlled

The hierarchies of associative responses were tabulated from the results of eliciting such responses under four conditions:

(1) Free Association. This has come to be the "classical" and most widely-used method since the pioneering work of Kent and Rosanoff with schizophrenic patients. The instructions are completely open ended. The subject is instructed to record simply the first word that comes to mind as he reads the stimulus words. The responses given by a group of subjects are then displayed as a hierarchy with the most frequent response (and its associated frequency) listed at the top followed by a decreasing order down to those responses given by only one subject in the sample. The 240 hierarchies (each component word is presented as a single stimulus item), the specific instructions, and an account of the scoring procedures are found in Appendix C.

(2) Restricted Association--Nouns. In many respects free association is too "free". This makes it difficult to study the association process in a systematic way. Subjects are able to impose too many interpretations upon the instructions. This

leads to a great deal of variability in the results. Riegel (24) and others have argued the virtues of a controlled or restricted task. Subjects were asked to respond to the same set of words as in the free association situation except that the instructions stressed giving the first noun that came to mind. The response was to be of the same grammatical form class as the stimulus. The tabulation was handled in the same manner as the free responses. The results are shown in Appendix D.

(3) Restricted Association--Adjective. The procedure was exactly the same as (2) except that an adjective response was called for. Deese (6) has investigated the associative structure of nouns. He found that for most nouns the associations consist mostly of other nouns, so that the associative structure might best be studied by describing the way nouns cluster in groups. But an important second point is that nouns are also concept names, and that these concepts are characterized by descriptions in terms of adjectives. A given noun may select some adjectives and reject others. The grouping of nouns can be determined by the common set of adjective modifiers. The hypothesis to be examined here is that noun pairs which have a large number of adjectives in common in these restricted association hierarchies will be learned more easily as compared to pairs which have few such common elements. See Appendix E.

(4) Joint Meaningfulness. Subjects are asked in this task to give an association to the pair as the stimulus. This is a direct measure of the associative overlap between the two words. As a simple examination of the associative process the words found in this hierarchy can be compared to the overlap that is found in comparing the hierarchies of the stimulus and response words in the free association task above. Indices derived from these responses can also be related to performance in the verbal learning tasks. See Appendix H.

(5) Detection Value. Interest in what has been labelled detection value stems from previous research by one of the principal investigator's (JCN) students (8). The procedure consisted essentially of a "detection game" in which subjects are given one word as a clue and then were required to guess an associated word. In one study, clue words were taken from the response words given in a free association task. The words to be detected were the stimulus words corresponding to the response words. Before playing the detection game, subjects were told how association data are gathered and they were instructed regarding the properties of a typical response hierarchy. In a typical item the subject was given the response word "chair" and was asked which stimulus word elicited that association.

The results were somewhat surprising with respect to previous findings. Some response words that are not high frequency responses nor particularly high in terms of meaningfulness and related measures have a marked influence on detection scores. An outstanding example is the stimulus word "ocean". Far down in the hierarchy of response words to ocean is "Atlantic". However, the clue "Atlantic" leads to a correct detection of "ocean" for almost all subjects. Another interesting finding was that the detection curve is flatter than the association hierarchy curve. Words relatively far down in the association hierarchy have higher detection values than their associative frequencies would suggest. These and other results of the Flaugher research indicate that the detection game can provide a measure of word-relatedness that supplements information derived from the classical method of association. See Appendix G.

Some preliminary analyses were performed on the rating scales. Table 2 shows the intercorrelations between the scales based on the pairs. They are all seen to be a highly inter-related set of dimensions. Table 3 relates the same scales to several measures of overlap or commonality of response indices. They are derived scores and the method of calculation is described below.

TABLE 2

Intercorrelations Among the Four Rating Scales
Derived from the Pairs as Units

	(1) Similarity of Meaning	(2) Co-occurrence of Referent	(3) Syntactic Co-occurrence	(4) Ease of Learning
(1)	1.00*			
(2)	.69	1.00		
(3)	.25	.65	1.00	
(4)	.45	.55	.72	1.00

*All values in this table are significant at $p < .01$

TABLE 3

Intercorrelations Among the Rating Scales
Derived from Pairs and the Measures
of Associative Overlap

	Free Association	Overlap Controlled- Noun	Controlled- Adj.
Similarity of Meaning	.44**	.40**	.52**
Co-occurrence of Referent	.24**	.41**	.29**
Syntactic Co-occurrence	.05	.36**	.01
Ease of Learning	.32**	.62**	.24**

**p < .01

The Free Association overlap scores are taken from Appendix F, Common Responses to Pairs. Each response hierarchy in Appendix F is composed of responses which occurred in both the hierarchies for the two members of a word-pair in the Free Association norms. The frequency listed in the Common Response hierarchy is the sum of the two frequencies in the Free Association hierarchies. The Free Commonality score for a word-pair is the sum of the response frequencies in the Common Response hierarchy. For purposes of simplification only Common Response hierarchies for male subjects were used to derive Free Commonality scores.

The Noun Commonality scores are derived from common responses in Noun Association hierarchies. The score for a word-pair was derived in the same manner as the Free Commonality score except that the parent hierarchies were Noun Associations rather than Free Associations. Moreover, common responses were drawn only from the five most frequently occurring responses. If, however, a response in the five most frequently occurring responses in one hierarchy also occurred in the other hierarchy but not among the five top responses, it was nonetheless counted common. In addition, if one member of a word-pair elicited the other in its five top responses, that response was counted common even though the response word necessarily could not occur as a response in its own hierarchy. Common responses for the Noun Commonality measure were drawn only from Noun Association hierarchies for male subjects.

The Adjective Commonality scores were derived in the same manner as Noun Commonality scores, except that the parent hierarchies were Adjective Associations rather than Noun Associations.

Similarity of Meaning is correlated with all of the commonality measures (See Table 3). This is also true for Ease of Learning, with the highest correlation for the Noun variable. Two nouns which elicit a large number of common nouns under the controlled association instruction are also rated as easy to learn. The two non-significant correlations in the table are between Syntactic Co-occurrence with Free Association Commonality and with Adjective Commonality.

SECTION III

Paired-associates Learning

In the next phase of this research project, two major experiments were performed. The two experimental situations were paired-associates learning and verbal discrimination learning. The first was chosen because it is the traditionally and most completely standardized and analyzed of the rote verbal learning methods. This task will be the subject of this section. The second was used because it requires a different kind of process to reach criterion performance (See Section IV).

In evaluating the paired-associates experiment which follows, it is important to flag certain features which are different from the usual requirements. As mentioned above, the purpose of the experiment was to obtain stable performance estimates for each pair. To achieve this, large groups of subjects participated in a group study-test procedure. The lists of pairs were longer than would usually be expected.

Method

The basic strategy was to present each pair to a number of subjects in a variety of list contexts, in several different random orders. The performance scores obtained for the pair under these varying conditions were examined for reliability, and then combined into a single index number. As a first step the 120 pairs were randomly divided into two lists of 60 pairs each. Each of these sets of items provided the stimulus material for one group of subjects (Groups I and II). Following the data collection for the lists the sets were recombined and randomly divided a second time (Two new lists of 60 items each presented to independent groups of subjects, III and IV). This process was repeated three more times. The complete experiment contained 10 groups of subjects, and each pair was presented in the context of five different lists.

The stimulus material was prepared on slides for presentation using a Carousel slide projector. One slide was made up showing both the stimulus and response word of the pair side by side (for use in the study trials). A second slide for use in the test trials contained the stimulus word only. Several copies of each slide were produced in order to facilitate the preparation of randomized lists.

The subjects for a given group were seated in alternate seats in a classroom and given a response booklet. The experiment was introduced as one of a series of studies in verbal behavior being conducted at Vanderbilt University. The general nature of the task was discussed. The subjects were told that they would see a long list of slides containing pairs of words. Their task would be to look at each slide as it appeared and to try to remember the pair of words. After the series of pairs was completed, a second set of slides would be projected containing only the left-hand or stimulus member and the task would be to remember the right-hand or response word. This response was to be written on the appropriate numbered blank on the response sheet. Questions were then answered by paraphrasing the appropriate sections of the instructions.

The set of 60 slides of word-pairs appropriate for Group I were then presented in random order at the rate of 1.2 sec. Immediately following the last slide, subjects were told to mark "Trial 1" at the top of the first page of the response booklet, a one sentence paraphrase of the instructions was repeated and the stimulus words alone (in a new randomization) were presented at a rate of 3 sec. Pilot work had indicated that this rate allowed ample time for the recall and recording of the response.

This process was repeated for two additional trials. A new randomization of the 60 pairs was used on each study trial. Likewise, each test trial used a new randomization of the stimulus words. At the end of the third test trial subjects signed their name on the back of the answer booklet and the session ended. The total time was approximately 40 minutes.

Groups II through X were run at varying times during the next 10 days. The groups ranged in size from 17 to 21. For purposes of analysis, subjects were randomly discarded so that the number of protocols to be scored in each group was 17.

Results

Each pair was tallied to determine the number of subjects who made a correct response on Trial 1, then on Trial 2, and finally on Trial 3. This procedure was completed for all of the groups.

A correlation analysis was used to assess the reliability of these scores. The scores were examined in several combinations: Trial 1, Trial 1 plus 2, and Trial 1 plus 2 plus 3. The inter-correlation matrices for the pairs in the five groups in which they appeared are shown in Tables 4, 5, and 6.

TABLE 4

Uncorrected Reliability Coefficients for the 120 Pairs
in Five Groups: Trial 1, Paired-associates Learning

	G1	G2	G3	G4	G5
G1	1.00				
G2	.58	1.00			
G3	.62	.63	1.00		
G4	.57	.55	.60	1.00	
G5	.64	.56	.54	.56	1.00

TABLE 5

Uncorrected Reliability Coefficients for the 120 Pairs in Five
Groups: Trial 1 plus 2, Paired-associates Learning

	G1	G2	G3	G4	G5
G1	1.00				
G2	.63	1.00			
G3	.66	.66	1.00		
G4	.67	.62	.70	1.00	
G5	.68	.62	.64	.64	1.00

An inspection of these tables indicates a satisfactorily high array of reliability indices. All of the individual entries are significant beyond the .001 level. On the basis of these results, great confidence can be placed in the stability of the score computed for each pair using the information in all five groups. Such scores were tabulated, and it is these scores that entered into all of the following analyses.

TABLE 6

Uncorrected Reliability Coefficients for the 120 Pairs in Five Groups: Trial 1 plus 2 plus 3, Paired-associates Learning

	G1	G2	G3	G4	G5
G1	1.00				
G2	.61	1.00			
G3	.68	.67	1.00		
G4	.66	.61	.69	1.00	
G5	.68	.63	.65	.69	1.00

Table 7 presents the correlations of the paired-associates performance scores with the measures of direct association. The entries are recorded for both Trial 1 and the sum over all three trials in the experiment. A comparison of these two columns indicates that most of the meaningful variance is contributed by the first trial and discussion will focus on this measure. The magnitude of the coefficients changes little as a result of including all trials. This observation was supported by a number of other comparisons not reported here, e.g. the trials considered separately, and Trial 1 plus Trial 2. Joint Meaningfulness and Detection Value-Forward produce significant correlations. Detection Value-Backward, with a value of .60, is more highly related than either of the other two. This is to be expected in view of the nature of the task. In Detection Value-Forward, the stimulus word of the pair was printed in the booklet, and the subject was asked to record the word. If the word was the "answer" in terms of the game, it would in general be highly available in the context of that stimulus item. And, it would then be highly available as a response when the pair was presented in the paired-associate learning task. This is, conversely, not true for the Detection Value-Backward format. Here the word that must be available in the learning task is already printed on the page.

The correlations with the various measures of overlap are significant. The most effective variable is Restricted Association-Noun. Noun pairs which have a large number of common associates under the restricted instructions are easy to learn. This supports Deese's assertion that the fundamental structure of noun associations involves other nouns.

TABLE 7

Correlation Coefficients Between Paired-associate Performance
and Direct Measures of Association

	Trial 1	Trial 1+2+3
Joint Meaningfulness	.32*	.29
Detection Value-Forward	.24	.20
Detection Value-Backward	.60	.56
Associative Overlap		
Free Association	.25	.26
Restricted Association- Noun	.46	.44
Restricted Association- Adjective	.25	.24

*All entries in this table are significant at $p < .01$

As shown by the analysis in Section II, all of the rating scales based on the pairs are moderately inter-correlated. Table 8 shows the expected pattern of moderate, but statistically significant, relationships with the four scales. One exception, with a higher coefficient, is rated Ease of Learning. This is the rating scale which has the most obvious face validity. When asked to rate ease of learning, subjects have available all of the possible dimensions that are assessed as separate variables by the other scales. They are able to use this information to do quite well at rating expected paired-associates performance. Such results have been reported by other investigators.

The rating scale values obtained from the stimulus and words of the pairs considered as individual items were also correlated with the performance scores. These results are summarized in Table 9. Only the frequency of usage of the stimulus (either rated or estimated from the Thorndike-Lorge magazine count) is significantly correlated with paired-associates performance. This is typical on two counts. First, most studies show (12) that the factors of frequency, meaningfulness, and related variables have their most important effects on the response side of the pair; and second, this sign of the relationship is invariably positive. This completes a review of the major findings of the first experiment.

TABLE 8

Correlation Coefficients Between Paired-Associates Performance
and Rating Scales Based on the Pairs

	Trial 1	Trial 1+2+3
Similarity of Meaning	.24**	.21*
Co-occurrence of the Referent	.25**	.21*
Ease of Learning	.55**	.51**
Syntactic Co-occurrence	.22*	.19*

* $p \leq .05$
** $p \leq .01$

TABLE 9

Correlation Coefficients Between Paired-associates Performance
and Rating Scales Based on the Individual Items

		Trial 1	Trial 1+2+3
Rated Frequency of Usage	Stimulus	-.23*	-.21*
	Response	-.03	-.05
	S + R	-.15	-.15
Evaluation	Stimulus	-.16	-.11
	Response	-.16	-.16
	S + R	-.19*	-.17
Imagery	Stimulus	-.07	-.09
	Response	-.01	-.02
	S + R	-.05	-.06

TABLE 9--Continued

		Trial 1	Trial 1+2+3
Meaningfulness	Stimulus	-.10	-.09
	Response	.06	-.04
	S + R	-.03	-.03
Thorndike-Lorge Frequency (L-count)	Log Stimulus	-.34**	-.31**
	Log response	.00	-.02
	Log S + R	-.20*	-.21*

*p < .05

**p < .01

SECTION IV

Verbal Discrimination Learning

Verbal discrimination learning has been used in relatively few experiments. In contrast to paired-associates learning there has also been very little work at the theoretical level. Underwood (26) has pointed out that the task should have considerable value in sorting out the components of the stimulus function. The reason for this is that the subject does not have to learn the responses per se as is necessary in paired-associates learning. The subject's task is characterized as recognition rather than recall learning. Given Underwood's analysis and the fact that the primary interest in this project is in stimulus variables, a verbal discrimination study was the obvious choice to complement the previous experiment.

Method

The basic design was the same as used in the paired-associates experiment with the following exceptions:

- (1) The slides used in the study trial contained both words. The word that had served as the response word in paired-associates learning was underlined and designated the "correct" word. The physical position (left or right hand side) was randomly varied on all study trials.
- (2) The slides for the test trials contained both words without the underlining. As in the study trials, the left-right position was randomly varied from trial to trial.
- (3) The instructions were changed appropriately. The subjects were asked to study each slide as it appeared and to try to remember which of the two words was underlined as the "correct" word. In the following test trial, subjects were instructed to look at each slide and to record in the test booklets the member of the pair that had been designated as the correct word.

Ten groups of subjects ranging in size from 20 to 23 were run during a period of two weeks. For purposes of analysis, subjects were randomly discarded so that the number of protocols to be scored in each group was 20.

Results

The scoring scheme followed the procedures of the paired-associates experiment. The results were first examined for reliability. The inter-correlation matrices for the pairs in the five groups in which they appeared are shown in Tables 10, 11, and 12.

TABLE 10

Uncorrected Reliability Coefficients for the 120 Pairs in Five Groups: Trial 1, Verbal Discrimination Learning

	G1	G2	G3	G4	G5
G1	1.00				
G2	.47	1.00			
G3	.38	.44	1.00		
G4	.53	.36	.33	1.00	
G5	.33	.56	.46	.22*	1.00

*p < .05, all others p < .01

TABLE 11

Uncorrected Reliability Coefficients for the 120 Pairs in Five Groups: Trial 1 Plus 2, Verbal Discrimination Learning

	G1	G2	G3	G4	G5
G1	1.00				
G2	.47	1.00			
G3	.42	.48	1.00		
G4	.54	.39	.38	1.00	
G5	.49	.59	.42	.32	1.00

The three tables convey essentially the same information. The coefficients are only slightly increased by the addition of the scores over all three trials. A significance level of .01 is reached for all of the entries except one: Group 4 and Group 5 on Trial 1. The magnitude of the correlations is sufficiently high for each group to insure a stable estimate for the pairs combined over all five groups. It is this combined score which is used in the following analyses. These tables of results parallel those constructed for the paired-associates experiment. The contents will be discussed at this point, and then both experiments will be compared in the next section.

TABLE 12

Uncorrected Reliability Coefficients for the 120 Pairs in Five
Groups: Trial 1 Plus Trial 2 Plus Trial 3,
Verbal Discrimination Learning

	G1	G2	G3	G4	G5
G1	1.00				
G2	.51	1.00			
G3	.42	.49	1.00		
G4	.53	.41	.46	1.00	
G5	.53	.55	.41	.34	1.00

First, Table 13 portrays the correlation with the direct measures of association. In this case, none of the entries reaches an acceptable significance level.

TABLE 13

Correlation Coefficients Between Verbal Discrimination
Performance and Direct Measures of Association

	Trial 1	Trial 1+2+3
Joint Meaningfulness	.00	.05
Detection Value-Forward	-.02	.03
Detection Value-Backward	-.08	-.10
Associative Overlap		
Free Association	.18	.14
Restricted Association- Noun	.05	.05
Restricted Association- Adjective	.04	-.02

The rating scales based on the pairs correlate negatively with verbal discrimination performance (Table 14). Two of these, Similarity of Meaning and Ease of Learning, are not statistically significant. With Ease of Learning, the relationship is essentially zero. This follows since the original ratings were taken under conditions which described the paired-associates learning task. The two indices of co-occurrence produce significant negative correlations.

TABLE 14

Correlation Coefficients Between Verbal Discrimination Performance and Rating Scales Based on the Pairs

	Trial 1	Trial 1+2+3
Similarity of Meaning	-.16	-.16
Co-occurrence of the Referent	-.27**	-.30**
Ease of Learning	-.04	-.06
Syntactic Co-occurrence	-.21*	-.25**

*p < .05

**p < .01

The same pattern of negative coefficients is shown in the table of correlations with the rating scales based on the individual items (Table 15). The significant effects are found generally with the ratings of the response member of the pair. For example, it is the rated Frequency of Usage of the response word that has a significant negative relationship (-.36) with verbal discrimination performance, whereas in the case of the stimulus word the correlation is essentially zero. There is one marked exception to this trend and that is Meaningfulness. For this dimension, the response word rating correlates -.21 with performance while the stimulus word correlation is of the same magnitude, but opposite sign (.21). The Thorndike-Lorge Frequency reflects the pattern of the rated frequency scale.

TABLE 15

Correlation Coefficients Between Verbal Discrimination
Performance and Rating Scales Based on the Individual Items

		Trial 1	Trial 1+2+3
Rated Frequency of Usage	Stimulus	-.03	.02
	Response	-.36**	-.38**
	S + R	-.23*	-.22*
Evaluation	Stimulus	.15	.20*
	Response	-.37**	-.34**
	S + R	-.13	-.08
Imagery	Stimulus	-.02	-.03
	Response	-.23*	-.24**
	S + R	-.17	-.19*
Meaningfulness	Stimulus	.21*	.21*
	Response	-.21*	-.21*
	S + R	-.01	-.01
Thorndike-Lorge Frequency (L-count)	Log Stimulus	-.08	.00
	Log Response	-.19*	-.24**
	Log S + R	-.15	-.11

*p < .05

**p < .01

SECTION V

A Comparison and Contrast of Paired-associates and Verbal Discrimination Learning

In the preceding sections the major task-situations studied in rote verbal learning have been introduced and analyzed separately. It is the purpose of this section to make several direct comparisons. One index of interest is the correlation between the two performance scores for each of the 120 pairs. This value was computed to be .27 ($p < .05$) for the means over three trials. Though this value is significant, indicating that the two tasks do share some common properties, the magnitude of the relationship shows that many of the pairs function quite differently in the two experiments.

In order to permit a visual comparison, Table 16 was compiled. The scores are recorded in terms of number of correct answers for the sums of Trials 1 + 2 + 3 for each pair, e.g., the values in the table can range from zero to three with the latter representing perfect performance. Overall, as expected, verbal discrimination learning (Mean = 2.60; SD = .16) was easier than paired-associates learning (Mean = 2.48; SD = .28). These differences are not large primarily because of a ceiling effect. Both tasks with stimulus materials of this type are very easy to "acquire" regardless of the particular experimental task. Looking at Table 16, the following four pairs show the greatest discrepancies in mean scores: BED-LAMP; FISH-TROUT; NEEDLE-RECORD; RAIN-BOW. In each of these cases, the stimulus words elicit one or two strong responses in free association: SLEEP; WATER, SEA; THREAD; WET, WATER, respectively. These high-strength associates would serve as interfering responses and would increase the difficulty of correct anticipation in a paired-associates test trial. Such responses would not play a role in verbal discrimination learning since it is, as pointed out earlier, a recognition task.

The remaining comparisons make use of the pairs of related tables in the two previous sections. First, with respect to the reliability coefficients, the values are uniformly higher for paired-associates learning. Because of the reduced difficulty of the verbal discrimination learning, there is a truncated range of possible scores which would reduce reliability. There is also a greater range of intergroup correlations for verbal discrimination learning indicating that the particular list context in which a pair appears produces a greater effect in this task.

TABLE 16

Mean Scores for 120 Word-Pairs for Paired-Associates
Learning and Verbal Discrimination

Word-Pair	Paired-Associates Learning	Verbal Discrimination
Antlers - Deer	2.94	2.54
Ape - Monkey	2.78	2.65
Apple - Pear	2.40	2.81
Ash - Gin	2.40	2.77
Athlete - Invalid	2.70	2.83
Ax - Hatchet	2.78	2.65
Baby - Bottle	2.58	2.70
Ball - Golf	2.14	2.53
Bandit - Thief	2.68	2.64
Banker - Beggar	2.54	2.92
Bed - Lamp	1.71	2.42
Bee - Honey	2.82	2.51
Boat - Lake	2.06	2.36
Boy - Man	2.34	2.49
Brick - Clay	2.30	2.69
Bug - Insect	2.59	2.32
Bullet - Gun	2.57	2.38
Butter - Oil	2.29	2.76
Butterfly - Worm	2.50	2.86

TABLE 16--Continued

Word-Pair	Paired-Associates Learning	Verbal Discrimination
Button - Shirt	2.42	2.26
Car - Automobile	2.71	2.57
Carpet - Wool	2.30	2.61
Castle - Hut	2.51	2.80
Cheese - Mouse	2.58	2.47
Child - Kid	2.34	2.73
Citizen - Resident	2.22	2.46
City - Town	2.76	2.52
Claw - Lobster	2.46	2.40
Clock - Watch	2.52	2.57
Closet - Storehouse	1.94	2.30
Clothing - Store	2.27	2.30
Corn - Field	2.46	2.52
Court - Tennis	2.02	2.68
Crocodile - Alligator	2.93	2.86
Crowd - Mob	2.60	2.71
Currency - Money	2.90	2.66
Dagger - Knife	2.74	2.56
Diamond - Jewel	2.33	2.65
Doctor - Physician	2.64	2.76

TABLE 16--Continued

Word-Pair	Paired-Associates Learning	Verbal Discrimination
Dog - Cat	2.81	2.71
Dream - Night	2.37	2.40
Dust - Bowl	2.42	2.34
Eagle - Bird	2.61	2.60
Emblem - Label	2.14	2.55
Engine - Steam	2.52	2.63
Farm - Barn	2.58	2.66
Fig - Leaf	2.75	2.42
Fish - Trout	1.99	2.57
Foot - Shoe	2.27	2.29
Friend - Enemy	2.75	2.67
Garbage - Can	2.87	2.71
Genius - Moron	2.39	2.81
Germ - Microbe	2.65	2.68
Giant - Midget	2.80	2.80
Girl - Scout	2.51	2.73
Glove - People	2.04	2.38
God - Devil	2.70	2.90
Goose - Duck	2.45	2.65
Grape - Vine	2.73	2.68
Gun - Trigger	1.88	2.41

TABLE 16--Continued

Word-Pair	Paired-Associates Learning	Verbal Discrimination
Hammer - Saw	2.08	2.61
Hand - Finger	2.36	2.70
Harbor - Ship	2.29	2.58
Hat - Coat	2.31	2.11
Head - Organ	2.21	2.53
Hour - Minute	2.70	2.67
Jail - Prison	2.62	2.59
Justice - Peace	2.75	2.53
King - Governor	2.41	2.81
Lettuce - Tomato	2.60	2.76
Library - Book	2.84	2.56
Lion - Tiger	2.73	2.65
Lip - Bacon	2.10	2.63
Lizard - Reptile	2.65	2.52
Lunatic - Fool	2.34	2.75
Milk - Maid	2.41	2.71
Minnow - Whale	2.76	2.69
Moon - Stars	2.54	2.71
Morning - Dawn	2.30	2.65
Mother - Sister	2.48	2.73
Mountain - Hill	2.71	2.77

TABLE 16--Continued

Word-Pair	Paired-Associates Learning	Verbal Discrimination
Needle - Record	1.56	2.27
Ocean - Sea	2.84	2.64
Orange - Fruit	2.41	2.71
Oyster - Shell	2.61	2.71
Paint - Brush	2.77	2.43
Paper - Pencil	2.44	2.65
Pearl - Necklace	2.72	2.28
Pen - Ink	2.66	2.58
Pot - Pan	2.77	2.58
Priest - Minister	2.70	2.67
Radio - Television	2.75	2.71
Rain - Bow	1.81	2.64
River - Bridge	1.95	2.72
Room - Ceiling	2.27	2.70
Rose - Thorn	2.67	2.67
Saint - Sinner	2.81	2.85
Salt - Pepper	2.82	2.66
Sheep - Meadow	2.15	2.37
Sink - Kitchen	2.52	2.34
Snake - Pit	2.37	2.74
Soap - Water	2.49	2.43

TABLE 16--Continued

Word-Pair	Paired-Associates Learning	Verbal Discrimination
Soldier - Rifle	2.21	2.60
Spider - Widow	2.50	2.67
Stamp - Envelope	2.34	2.41
Step - Brother	2.34	2.58
Stove - Coffee	2.05	2.52
Street - Road	2.55	2.50
Summer - Church	2.20	2.67
Thunder - Storm	2.65	2.48
Tobacco - Smoke	2.73	2.50
Turtle - Rabbit	2.33	2.53
Typewriter - Ribbon	2.81	2.71
Waffle - Syrup	2.57	2.77
Wedding - Ring	2.86	2.74
Whiskey - Party	2.94	2.63
Window - Frost	2.00	2.70
Woman - Skirt	2.18	2.79
Worker - Loafer	2.43	2.79
Yolk - Egg	2.96	2.49

Paired-associates performance correlates substantially with all of the direct measures of association while verbal discrimination performance correlates near zero with all such measures. This can be interpreted to mean such variables as the number of associations the pair elicits and the overlap between the free association hierarchies play no role in a task where there is no response learning or recall required. Factors based on "associative arousal" or the structure of associative relationships are not relevant to verbal discrimination learning.

Rating scales such as Similarity of Meaning and the various Co-occurrence measures show opposite effects in the two tasks (positive in paired-associates learning and negative in verbal discrimination learning, with greater magnitude in the former case). Words which are similar in meaning, occur in the same syntactic structures, and which have referents that occur together will also elicit each other in free association--and the words will be available to recall in the anticipation procedure of paired-associates learning. All of these could be expected to hinder verbal discrimination performance since they could lead to confusion of the two members of the pair; and thus appear as negatively correlated variables. However, this is true only for the two co-occurrence indices (Referent and Syntactic).

A comparison of the ratings of the individual items provides some consistent, though puzzling, results. The signs of the correlations are uniformly negative for both tasks, but the location of the significant values is almost split evenly between the two tables (stimulus word for paired-associates learning, and response word for the verbal discrimination task). The two frequency dimensions are good examples. There is no apparent explanation for these effects. In paired-associates learning the major frequency effect is routinely found on the response side, and is always positive. Perhaps, using highly frequent nouns and the study-test group procedure there are complex interference effects on the stimulus side. But the frequency results are even more puzzling in verbal discrimination learning since all of the words (stimulus and response) are always present when the choice is to be made. "Availability" should play no role in this choice, especially with this type of stimulus material. Only systematic experimental manipulation of these variables could provide a satisfactory explanation.

SECTION VI

Related Experiments

The major effort in this program of research has been absorbed in experiments which employed a correlational analysis. Three experiments are reported in this chapter in order to illustrate the potential usefulness of the normative material in selecting stimulus words. The rating scale information and the association hierarchies permit a controlled selection of items varying in one dimension. The two experiments investigated the semantic generalization and free recall of word-pairs which are similar or opposite in semantic relationship.

Semantic generalization is typically explained by references to an implicit mediating response. The probability of this implicit response is independently determined from word association norms (17). Association strength assessed in this way, however, may not be the only basis for the observed generalization. Karwoski and Schachter (15), for example, have introduced a classification scheme for associates which uses essentially two categories: "similar" and "opposites". Building on this scheme, Olson (19) hypothesized an "implicit meaning response" joining similar but not opposites and operating independently of association strength. To demonstrate its effect, he studied similar and opposite word-pairs matched for association strength in a semantic generalization task. He predicted greater generalization to similar words than to opposites, but this hypothesis was not supported. Similar and opposites were not significantly different, although both showed significant generalization when compared to control words.

The choice of materials in the Olson experiment may have contributed to the failure to confirm the hypothesis. Similar and opposite pairs were matched for association strength and this strength was high. In fact, the response word in every case was the primary response to the stimulus word. The operation of an independent meaning response might be very difficult to detect in a situation in which the associative relationship is so powerful.

In the following studies Olson's list of high association (HA) pairs was augmented by a list of low association (LA) pairs. This combined list of stimulus materials was used in two experiments to examine the relative contribution of association strength and semantic relationship to performance in two different tasks. Exp. I used a task and procedure similar to those in the Olson study, with the expectation that the effects of semantic relationship would be more likely to appear among the LA pairs. Duration

of presentation of the items during the test phase was also varied in this experiment. Pilot work in another context had produced a trend toward higher indices of generalization for longer exposure durations. The results showed that opposite pairs at both levels of association strength produced significant generalization while similar pairs did not differ from controls. Exp. II utilized the same pairs in a free recall task, using an index of clustering to measure the effect of the two variables. A significant interaction resulted. Similar pairs produced clustering scores at an intermediate level which did not differ as a function of association strength. HA opposite pairs produced the largest clustering score in the four categories and LA opposite pairs the lowest score. The utility of the implicit meaning response is discussed in terms of the results of these two experiments.

Experiment 1

Sixty subjects were recruited from introductory psychology classes at Vanderbilt University and were randomly assigned to the four treatment groups. Participation in experiments was a course requirement.

The stimulus material presented to Group HA was the same as that used by Olson (19, p. 329, Table 1) with one exception. In order to permit effective matching with pairs for Group LA, one pair each of opposites and of similars was deleted (BEAUTIFUL-UGLY; COMMAND-ORDER) leaving a total of six in each category. Wore-pairs for Group LA (see Table 17) were drawn from unpublished similarity of meaning ratings gathered at Vanderbilt University on 120 noun-pairs ($N = 64$). The 7-category rating scale used anchors labelled "very similar in meaning" and "very dissimilar in meaning". Two illustrations were used in the instructions to further specify the dimension: BEGGAR-MILLIONAIRE (Scale value = 1) and CHILD-YOUNGSTER (Scale value = 7).

As shown in the last column of Table 1, items were picked from the extremes of the scale. The pairs were also selected to have forward and reverse association strengths as near zero as possible (Columns 3 and 4 of Table 17). This information was drawn from unpublished word association norms ($N = 350$) collected at Vanderbilt University. Furthermore, inter-item association strength was kept near zero (maximum value = 1% of the total), and the categories were closely matched on frequency of cultural usage as assessed by the Thorndike-Lorge word count (25). Seventeen neutral words were chosen which had no associative overlap greater than 1% with the words shown on Table 17 and with the words retained from Olson (19).

TABLE 17

Percentage of Association and Similarity Rating Scale Values
for the Low Association Strength Pairs

Stimulus Word	Response Word	Percentage Forward Association	Percentage Reverse Association	Similarity Scale Value
Similar:				
LUNATIC	FOOL	0.29	0.00	5.21
PRIEST	MINISTER	7.14	4.57	6.24
GERM	MICROBE	0.29	16.30	5.54
EMBLEM	LABEL	0.00	0.29	5.12
CITIZEN	RESIDENT	0.86	0.29	5.63
CLOSET	STOREHOUSE	0.00	0.29	4.45
	MEAN	1.43	3.62	5.37
	MEDIAN	0.29	0.29	5.37
Opposite:				
WORKER	LOAFER	0.57	1.14	1.21
BANKER	BEGGAR	0.00	0.00	1.42
TURTLE	RABBIT	0.86	0.00	2.00
ATHLETE	INVALID	0.00	0.57	1.12
CASTLE	HUT	0.00	0.00	1.67
MINNOW	WHALE	0.29	0.00	1.85
	MEAN	0.29	0.29	1.55
	MEDIAN	0.29	0.00	1.54

Each learning list contained the 12 stimulus words of the appropriate pairs plus six dummy words. Three dummy words appeared at the beginning and end of the list while the 12 words were arranged in between so that opposite and similar members were alternated in the series. The 28 word test list consisted of the 12 response words, 5 of the dummy words, and 11 neutral words. Six randomizations of this list were prepared with the restriction that no more than two words from a single classification could appear in succession in any randomization.

The word lists, typed in capital letters on white paper tape, were presented to the subjects on a Lafayette memory drum. A small box with a single button in the center was placed at the subjects right hand. The response was a press of the button with the right index finger. Subject was told that this was an experiment studying speed of recognition and that the button was to be pressed for each word that appeared in the window. Two presentations of the learning list followed. Each word was exposed for 1.0 sec. with a 1.0 sec. inter-item interval. After a 2 min. break, subject was told that a second, longer list would be exposed, and that he was to press the button to words that had appeared in the original list. The instructions stressed a "weak" criterion of recognition. Exposure for test list words was at either a 1 sec. or 2 sec. rate depending upon the treatment group. The inter-item interval corresponded to the exposure time. The 6 randomizations were presented without interruption.

The mean number of responses per subject per word was computed for each semantic category, for dummy words repeated from the learning list, and for neutral words. The group means are shown in Table 18. An analysis of variance was performed on these scores with association strength (high vs. low) and time (1 sec. vs. 2 sec.) as between-subject variables and test list category (similar, opposite, dummy, neutral) as a within-subject variable. Two sources of variation were significant: association strength with $F(1,56) = 5.76$, ($p < .02$) and test list category with $F(3, 168) = 464.62$, ($p < .001$). The time main effect had an $F < 1$, and no interactions were significant. The neutral category mean provided a base-line control for evaluating test list categories in a Newman-Keuls multiple comparisons test (30, p. 309). Dummy words were significantly different from the control category ($p < .001$). Opposites were significantly different from controls ($p < .05$). The mean of the similar category did not reach a satisfactory significance level.

TABLE 18

Mean Number of Responses per Subject per Word in Each
Test List Category Summed Across Six Randomizations

		Similar	Opposite	Dummy	Neutral
High Association	1 sec.	1.20	1.41	5.08	1.02
	2 sec.	0.91	1.14	5.33	0.78
Low Association	1 sec.	0.40	0.74	5.41	0.39
	2 sec.	0.66	0.71	5.04	0.52
Grand Mean		0.79	1.00	5.23	0.68

Experiment II

Jenkins (19) has suggested that tasks used in verbal behavior experiments vary on a dimension of associative arousal. A task such as the motor-response generalization test list used above is relatively low on this dimension. On the other hand, a task such as free recall (FR) is rated the highest entry on this hypothetical scale. In FR, subject is instructed to use all the available information to remember as many words as possible. In this context, implicit responses based upon associative relationships or semantic category membership should play a greater role. Also, any differential contribution should be easier to detect. The purpose of Exp. II was to present the same stimulus materials used in Exp. I in a FR task in order to take advantage of the anticipated increase in associative arousal. Differences that were marginal in Exp. I were expected to be larger in this situation.

Eighty subjects were recruited under the conditions described above. All stimulus materials were selected from those used in Exp. I. A randomized list of the 24 words that make up the HA pairs (plus 4 neutral words inserted at each end) was presented to groups of subjects using a slide projector. The duration of exposure of each slide was 1 1/4 sec. The subjects were instructed to look at the list of words and try to remember as many as possible in any order. A 4 min. recall period followed this presentation. A total of 5 recall trials was given using a different randomization of the stimulus materials in each case. Forty subjects (20 male, 20 female) participated in this manner in three separate groups.

This procedure was repeated using the LA pairs. The order of running the HA and LA groups was randomly determined.

A forward clustering score for similar and opposite pairs was computed for each trial for each subject. A forward cluster was tallied if the stimulus word in the pair was immediately followed by the response word. In order to adjust for differences in the absolute number of words recalled a derived score was calculated which was expressed as a ratio of number of clusters to the number of opportunities to cluster. An opportunity was defined as the appearance of the stimulus member of a pair. The value of such a score could range from zero to one. The group means for forward clustering are shown in Table 19. A backward clustering score was also computed from response words immediately followed by the appropriate stimulus word.

TABLE 19
Mean Derived Clustering Scores in Each Recall Trial

		Trial				
		1	2	3	4	5
High Association	Similar	0.35	0.54	0.75	0.82	0.84
	Opposite	0.51	0.78	0.82	0.84	0.91
Low Association	Similar	0.39	0.47	0.64	0.66	0.69
	Opposite	0.07	0.20	0.32	0.40	0.33

Preliminary analysis showed that the three groups within each level of association strength produced similar results. These groups were combined and an analysis of variance was performed on the forward clustering scores with association strength and sex as between-subject variables and semantic category and trials as within-subject variables. The source of variation of primary interest is the association strength by semantic category interaction with $F(1, 76) = 57.92, (p < .001)$. It is clear from an inspection of Table 19 that this interaction is due to the reversal of the similar and opposite recall indices at the two levels of association strength. For the HA group, opposite pairs produced

consistently higher derived clustering scores than similar pairs, while for the LA group the reverse is true. Except for the inversion of two points on Trial 1, this pattern is uniform across all five trials. Other significant sources of variance were the main effects for association strength with $F(1, 76) = 61.93$, ($p < .011$), for trials with $F(4, 304) = 44.00$, ($p < .001$), and for semantic category with $F(1, 76) = 12.55$, ($p < .001$). The main effect of sex was not significant and it did not contribute to any significant interaction. Earlier studies of free recall using subjects from the Vanderbilt population had produced a sex difference, but there was no indication of one in this experiment. An analysis of the backward clustering scores produced essentially the same pattern of results. The only difference was that the semantic category main effect was not significant. Since the results were so similar, no further detail is reported.

The groups in Exp. I which replicated the major features of the Olson (19) study only partially supported his findings. Opposite words showed significant generalization when compared to neutral words. However, similar words did not. This same pattern was found for the low association pairs selected for Exp. I. Also, a variation of the exposure interval in the test list did not modify these results. In each case the order of the three categories from highest to lowest was the same: opposite, similar, neutral.

Part of the reason that differences were more difficult to detect in this experiment might be due to a "floor effect". Direct comparison between the two experiments is not possible because of a change in list length. However, on a per-word basis the subjects in this experiment were responding at a reduced rate: 0.68 for neutral words as compared to 1.07 for Olson and 1.02 versus 2.04 for opposites. On the other hand, subjects in this case performed at a higher rate with respect to the dummy words: 5.23 versus 4.25. These subjects were more efficient at categorizing the test list into old and new items. The proportion of "false alarms" on the whole was very small. This may account for the lack of significant differences between neutral and similar categories. It does not, of course, account for the consistent effects with opposite words. This finding does support the suggestion made by Deese (5) that the strong relationship of opposites such as HOT and COLD arises because they are descriptive of a common conceptual dimension. Similar words do not share such a common dimension.

Examination of Exp. II in which associative arousal was expected to play a larger role, shows that the HA words support the outcome of Exp. I. Opposites show more clustering than similars

across all of the five trials. The LA similar words (with the exception of Trial 1 noted above) rank third in degree of clustering. The LA opposite words are the unusually deviant group. They show sharply reduced clustering indices when compared to the other three categories of words. The opposite relationship, unsupported by association strength, proved a weak source of clustering in recall. There is no ready explanation for the performance for this category in this experimental situation as compared to Exp. I. There are obvious differences between the tasks, of course, but there is no apparent reason for the peculiarly different influence of these task variations on LA opposite words. There is evidence that semantic relationships do play a role in verbal learning tasks and that the contribution of such relationships is not a simple one. The effect is unstable within the same task and shows wide variation between tasks. One firm conclusion that can be drawn from studies of this type was suggested by Olson (19). Words from the natural language are related in many different ways. Degree of similarity of meaning and association strength are only two dimensions of relatedness. The generalization and clustering effects in the experiments above may have also been enhanced or inhibited by a variety of other dimensions.

Experiment III

In addition to the two experiments reported above, a third experiment was completed. The question to be examined derived from the results of Experiment I. In that experiment the lists of stimulus material were constructed so that each subject was exposed in the generalization task to a list containing both similar and opposite pairs. That is, semantic category was a within-subject variable while each subject was exposed to only one level of association strength (a between-variable in the experiment). Recent findings have focused attention on the nature of the lists ("mixed" versus "unmixed") in verbal learning studies (4, 23). Results suggest that lists of unmixed materials allow more opportunity for the variables to operate in an unconfounded fashion. Underwood (27) has made the statement that only when a comparison of two conditions with unmixed materials is available is it possible to ascertain whether or not the mixed list condition produces extraneous effects.

The following study provided such a comparison. The stimulus material from Experiment I was realigned into a list of similar pairs and an independent list of opposite pairs. An additional variation was introduced by varying the exposure

time in the learning stage (as opposed to the test stage) at two levels (one second and two second). Thus, the experiment employed a 2 x 2 x 2 design, i.e. three factors at two levels each.

Sixty subjects were recruited from introductory psychology courses at Vanderbilt University. Participation in these experiments was, as usual, a course requirement. The sample of students was randomly assigned to one of four experimental groups: Group I - Similar, 1 sec.; Group II - Opposites, 1 sec.; Group III - Similar, 2 sec.; Group IV - Opposites, 2 sec.

The procedure and apparatus were the same as Experiment I in all essential features. One learning list consisted of the 12 stimulus words of the similar pairs with three neutral words (designated as "dummy" words) at each end of the list. The high association and low association words were alternated in the list. The other learning list was identical except that the 12 stimulus words of the opposite pairs were used.

Each test list consisted of the 12 appropriate response words for the stimulus words, 5 of the dummy words, and 11 neutral words. The words were distributed randomly in the list with the restriction that no more than two words of either association strength could appear in succession.

As a first step in analyzing the results, the mean number of button-pressing responses per subject per word in each test-list category was computed as the performance measure, with six being the maximum score in each category. Table 20 summarizes the group means.

TABLE 20

Mean Number of Responses per Subject per Word
in Each Test-List Category: Experiment III

Time	Semantic Category	High A	Low A	Repeated	Neutral
1 sec.	Similar	1.26	0.66	4.99	0.29
	Opposite	0.80	0.26	5.33	0.67
2 sec.	Similar	0.31	0.22	5.25	0.23
	Opposite	0.50	0.40	5.47	0.38

Semantic category and learning list exposure were between-subject variables while level of association strength was a within-subject variable. A 2 x 2 x 4 repeated measures analysis of variance performed on the data yielded the results shown in Table 21.

The analysis revealed no significant difference between number of responses to similar words and to opposite words; nor was there a significant main effect for the time variable. However the within-subject variable of test-list category consisting of high association strength words, low association strength words, repeated words, and neutral words was significant ($p < 0.001$). There was also a significant interaction (see Fig. 1) between exposure time and the within-subject variable ($p < 0.01$). It is worthwhile to note that the omega-squared value is 0.003 indicating essentially zero degree of predictive relationship between the interacting variables.

When Newman-Keuls multiple comparisons were made among the four separate category means of the within-subject variable, the results were as follows: at Time I (1 second) high association strength words were significantly greater than neutral words and than low association strength words, and repeated words reached significance over neutral words, low association strength words, and high association strength words; at Time II (2 seconds) only the repeated words differed significantly from the other three categories. Table 22 summarizes the results of these individual comparisons with the alpha level at 0.01.

The finding of no significant difference in amounts of generalization to similar words and to opposite words supports the conclusion of the Olson (19) study and contradicts the contention of Karwoski and Schacter (15) that association by similarity is stronger than association by contrast. In the Experiment I opposites showed more generalization than similars in lists of mixed semantic category.

It appears that there may be a stronger tendency to respond to opposites when both are present in the same list or that similars are more easily recognized as such in a mixed list and are thus less vulnerable to "false alarms". When lists of unmixed semantic category are used, there is only one set for responding available to the subject depending on the list given to him, and he adapts to it quicker in the task. Therefore the confusion in sets to respond or in types of relationship inherent in the mixed list design may be a confounding variable.

TABLE 21

Summary Table for Analysis of Variance of
Test-List Responses: Experiment III

Source	df	Sum of Squares	Mean Square	F-Ratio	Probability	Omega Squared
Between Subjects						
Time (A)	1	2.042	2.042	2.470	0.121	0.001
Semantic Category (B)	1	0.339	0.339			
A x B	1	0.702	0.702			
<u>Ss</u> / AB	56	46.300	0.827			
Within Subjects						
Test-List Category (C)	3	1024.917	341.639	922.749	<0.001	0.893
A x C	3	5.112	1.704	4.602	0.004	0.003
B x C	3	2.334	0.778	2.101	0.102	0.001
A x B x C	3	2.368	0.789	2.132	0.098	0.001
C x <u>Ss</u> / AB	168	62.200	0.370			
Total	239	1146.315	4.796			

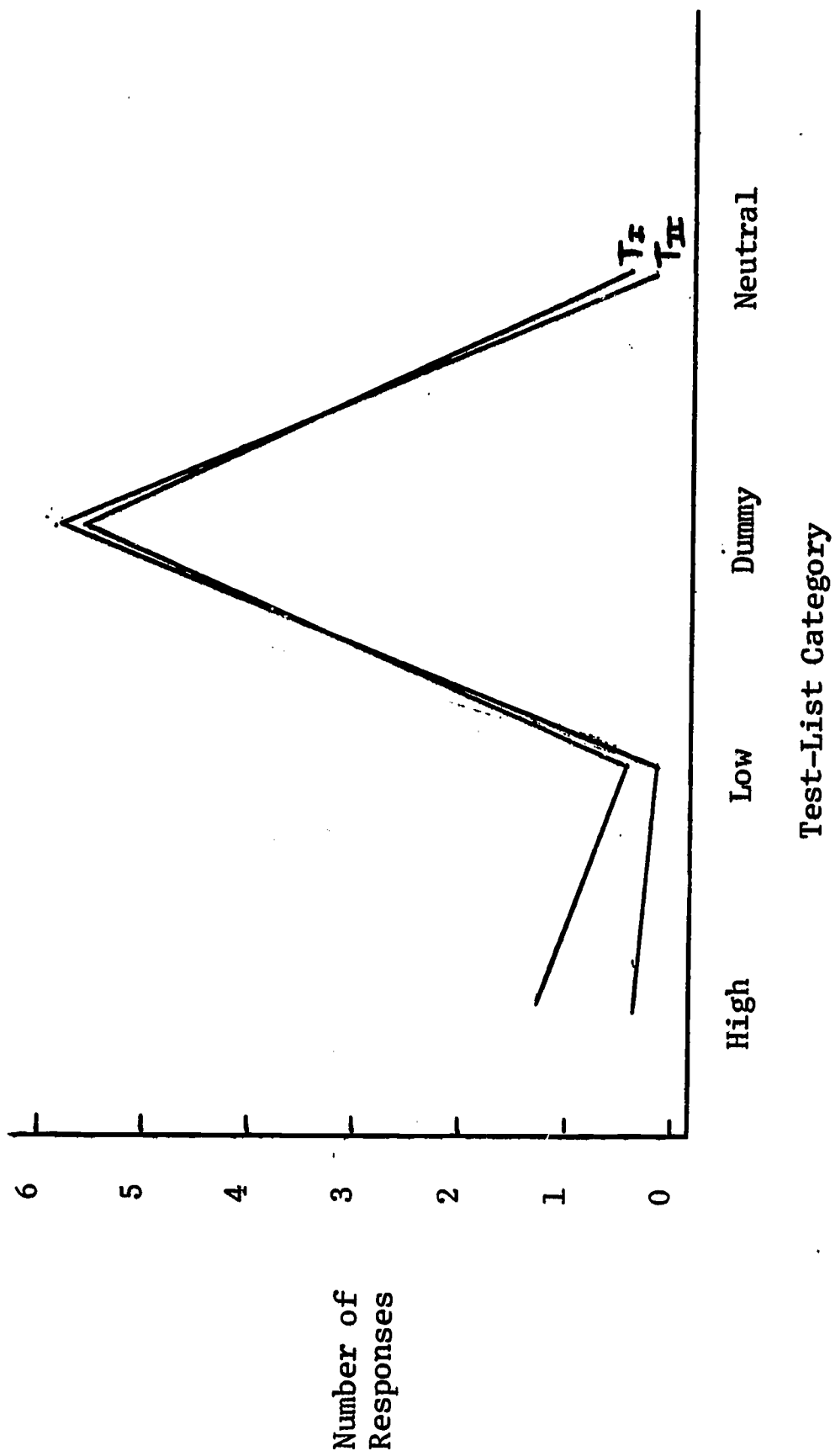


Figure 1. Graph of Interaction Between Time and Test-List Category: Experiment III

TABLE 22

Summary Tables for Individual Comparisons
Among Test-List Categories

<u>Time I</u>					<u>Time II</u>				
LA	N	HA	R		N	LA	HA	R	
LA		*	*	N				*	
N		*	*	LA				*	
HA			*	HA				*	

Like Experiment I, the present experiment showed no significant main effect for the variation of exposure time. However, there was a trend in both studies for more generalization to occur when both learning list exposure time and test list exposure time were one second than when either was lengthened to two seconds. This trend seems to indicate the possibility of a "confusion hypothesis" of semantic generalization. When the subject has less time to learn or to respond, he becomes confused and is more prone to make "false alarms". If given two seconds in either the learning or test stage, the subject virtually learns the list perfectly; or he rejects the implicit mediation which occurs initially. It might also be that the internal response occurs in a relatively short time, i.e. in less than one second, or that mediation is an all or none phenomenon which an increase in exposure time does not facilitate.

The explanations cited for the time manipulation gain further support from the significant interaction between time and the within-subject variable. At the one-second exposure time generalization is significantly higher to high association strength words than to low association strength words, but at the two-second level there is significant generalization to neither high association strength words nor low association strength words. Apparently the degree of learning is so high for the two-second exposure time that the usually powerful variable of association strength has no opportunity to operate. In the two-second condition there are fewer errors (responses to high association, low association or neutral words) and more correct responses (to repeated words).

A comparison of the Olson (19) study, Experiment I, and the present study seems to indicate that the task employed to assess mediated generalization is highly unstable under even optimum conditions. The results point toward the conclusion reached by Deese (5) and others who suggest that opposition and similarity are equally integral dimensions of the associative linkage and that the relationship involves a much more complex structure which is not open to analysis with the present S-R techniques.

In a recently published paper, "The organization of linguistic performance", Wales and Marshall (29) sharply question the crude means which have been used to investigate semantic relationship. They challenge the efficacy of studying human conceptual organization by such measures as salivary responses, GSRs, and blood vessel dilation. The authors cite evidence which implies that cognitive theories are necessary to explain the conditioned responses such as salivation assessed by these S-R methods. Thus it appears more sensible "to dispense with rolls of cotton wool in the mouth and to study cognition more directly". Perhaps the peripheral button-pressing task should likewise be replaced by a more direct probe of the cognitive semantic and associative relationships.

SECTION VII

Conclusions and Implications

The basic research program to study a variety of word-relatedness patterns has led to a number of conclusions which can best be presented as a series of numbered statements:

(1) In studying the associative process by the technique of word association tests, the classic free association format is useful. In addition, important information can be gained from controlled or restricted tasks. For example, the number of overlapping nouns that the stimulus and response share (in a Controlled Association, Noun task) is an effective predictor in learning experiments.

(2) A number of rating scales have been developed based on both items of the pair and on the individual words. These scales appear to tap overlapping, but partially independent, sources of variation in performance scores on the learning tasks.

(3) Two new indices of word-relatedness have been developed and examined, Joint Meaningfulness and Detection-Value. Both proved to be useful predictors of performance in paired-associates learning, but unrelated to verbal discrimination learning. This difference was discussed in terms of the requirements of the two tasks.

(4) The efficiency of the group study-test procedure and the "by-pair" analysis has been demonstrated for rote verbal learning studies. This is particularly effective when the properties of the stimulus material form the focus of the investigation.

(5) Paired-associates learning and verbal discrimination learning show a markedly different pattern of correlations with dimensions of the stimulus material. Measures which tap "associative arousal" are effective predictors of paired-associates performance, but unrelated to verbal discrimination learning.

(6) In addition to the correlation analyses, several studies of traditional design were conducted to examine the nature of the Similar-Opposite relation. Some theoretical accounts have predicted that similarity would be the more potent aspect of the two in such tasks as mediated generalization of a motor response. The experiments reported above do not support that prediction. Moreover, the magnitude and direction of the differences is very much a function of the specific experimental design and procedures employed in a given study.

The implications for rote verbal learning are reasonably clear. The range of available techniques should be expanded to include "by-pair" correlational analyses based on group study-test procedures. Reliable results can be obtained with reduced effort and expense. Generalizations of results should not be made directly from paired-associates learning to verbal discrimination learning. The two tasks are sensitive to different aspects of the stimulus pairs. Finally, the methodological caution expressed by Underwood (27) has been supported. The results of experiments may depend upon the type of stimulus lists used--whether mixed or unmixed with respect to the levels of the variable under investigation.

In a broader context, recent developments in psycholinguistics have called into question the relevance of research with natural language materials in the simple kinds of laboratory tasks where only word-word relationships are studied. The thrust of the argument comes from the logical analysis of language provided by the linguistically trained members of the psycholinguistic group. They assert, essentially, that the portrayal of language as a highly structured, and hierarchically organized, system makes it difficult to specify which properties of this system are "captured" by the traditional rote verbal learning tasks.

It was not the purpose of this project to incorporate the psycholinguistic literature, but future work of this type must be evaluated in the context of these arguments. The general tone can be conveyed by quotations from two recent publications by established investigators in this field. First, Professor James Deese (in press) speaking at a conference at the University of Kentucky in the spring of 1966. In evaluating the empirical findings from the study of verbal associative processes he said, "We have discovered remarkably little that is stable or of general significance, given a century of investigation and thousands upon thousands of experiments. The comparison with the remarkable progress in the past few years that has been made in linguistic theory--in part concerned with much the same subject matter--is especially revealing. Linguistic theory, as we now know, has gone into a revolutionary phase in which many of the assumptions standing behind earlier investigations have been abandoned in favor of far richer assumptions leading to broader investigations that much more reasonably permit the characterization of the phenomena under study. The assumptions that are being abandoned in linguistic theory, by the way, bear a suspiciously familial resemblance to the notions of classical associationism".

The second remark is from J. J. Jenkins (1965) speaking at a conference, "If one gives credence to these arguments, it must be apparent that grammatical behavior itself is to be a battleground on which traditional associational psychology will be slain. If this important behavior cannot be dealt with, the associationist may well be written off as far as human behavior is concerned, for it is likely that the explanation of all higher mental processes will be beyond this reach. I believe the psychologist must rise to the challenge or prepare to retire to the dim corners of his laboratory where he deals only with narrow segments of behavior which happen to fit his theoretical formulations".

Given the success of the studies of this project within the domain for which it was designed, there remains definite power in the suggestions that the results may not be relevant for much beyond the specific laboratory task-situations.

SECTION VIII

Summary

The purpose of the project was to examine the effects of several measures of word-relatedness on several verbal learning tasks--primarily paired-associates learning and verbal discrimination learning, with incidental attention given to free recall and semantic generalization. The strategy was to select a sample of word pairs (in this case, 240 common nouns arranged into 120 pairs to represent a variety of judged relationships) and then to study these pairs extensively in a variety of experimental task situations.

Normative data was collected for all of the pairs using standard rating scale techniques (Similarity of Meaning, Co-occurrence of the Referent, Rated Ease of Learning, and Syntactic Co-occurrence) plus association tasks. The two association tasks were developed as part of this project: Joint Meaningfulness which was based on a direct instruction to give associations to the pair as a stimulus, and Detection Value which requires the subject to guess the word that might have been the stimulus word for the item in the booklet described as the response given in the usual free association test.

In addition to the material compiled for the pairs, several indices were assessed for each individual item. Some of these were rating scales (Evaluation, Imagery, Meaningfulness, and Rated Frequency of Usage), while the remainder were associative tasks (Free Association, Controlled Association-Noun, Controlled Association-Adjective). Each of these measures was obtained from a large independent sample of college students at Vanderbilt University. This first phase of the work was completed with an evaluation of the reliability of the indices (satisfactorily high in all cases) and the calculation of the various inter-correlation matrices (in the main, many of the variables tap overlapping and independent sources of variance). The nouns are attached as appendices to this report.

Paired-associates learning and verbal discrimination learning scores were determined in two experiments. The interest was in achieving a stable score for each pair in contrast to the usual attack of scoring by-subject. To do this a group study-test procedure was developed and used with appropriate minor changes in both experiments. Each pair appeared in five different 60-item lists. Each list was presented to an independent group of

subjects for three trials (one study exposure of the pairs, one test exposure of the stimulus word alone per trial). Different randomizations were used for each study and test presentation. The reliability of the scores for each pair was examined by calculating the 5 x 5 intercorrelation matrix for the groups using the scores for the 120 pairs tallied in each group. In both experiments the reliability was satisfactorily high (though relatively higher for the paired-associates task) and a combined score was obtained for each pair across groups. This score was used in all subsequent analyses.

The learning task scores were correlated with all of the variables describing aspects of the stimulus material. The major interest was in comparing the patterns of correlation for the two experiments. Several major differences were found. Paired associate performance correlates substantially with the measures of direct association (Joint Meaningfulness, Detection Value, and derived measures of associative overlap) while verbal discrimination performance correlates near zero with all such measures. Also, rating scales such as Similarity of Meaning and the Co-occurrence measures show opposite effects (positive in paired associates learning and negative in verbal discrimination learning). The general conclusion is that properties of the stimulus material play very different parts in the two tasks, and great caution must be exercised in generalizing results from one to the other.

A final section of the project demonstrated the utility of the normative data described above as a source of word-pairs for other experimental approaches. Three studies were completed addressed to the nature of the similar-opposite relationship. In particular, the hypothesis under test was that the similarity relationship was the more potent of the two. The experimental tasks were mediated generalization of a motor response and free recall. The hypothesis was not supported and the results were shown to be sensitive to the particular design employed.

SECTION IX

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APPENDIX A

MEAN SCALE VALUES FOR RATED MEANINGFULNESS,
RATED IMAGERY, RATED EVALUATION, RATED
FREQUENCY OF USAGE AND LOG THORNDIKE-LORGE
FREQUENCY FOR 240 WORDS

Meaningfulness

The norms for rated Meaningfulness were collected from 110 introductory psychology students at Vanderbilt University in the Fall of 1965. The first terms from each of the 120 pairs were presented to a group of 55 students (39 males and 16 females), and the second terms from each pair to a second group of 55 students (31 males and 24 females). The words were listed in a mimeographed booklet and each word was typed above a seven-point scale, as, for example,

jail
: 1 : 2 : 3 : 4 : 5 : 6 : 7 :

The subject was told that the task was an associative one and that he was to indicate on the scale the number of things or ideas the word reminded him of. Numbers at the low end of the scale indicated a small number of associations and those at the high end of the scale a large number of associations. The last page of the booklet was detachable and described the seven-point scale in the following manner:

"This is the rating scale to be used in your judgments of meaningfulness of words. Keep it in front of you as you look at each pair.

: 1 : 2 : 3 : 4 : 5 : 6 : 7 :

The numbers under the scale position are to be interpreted like this:

1. none
2. much fewer than the average word

3. fewer than the average word
4. about the same number as the average word
5. more than the average word
6. many more than the average word
7. extremely many"

Before rating any words, the subject was asked to read through the first 30 words to get a "feel" for the nature of the task. No time limit was placed on the task, but subjects were discouraged from lingering over items.

Each of the 240 terms in the 120 pairs was thus rated by 55 subjects. The mean scale value for each term is presented in the first column of Table A-1. For the 120 stimulus members of the word-pairs, the overall mean rating was 3.96. The overall mean for response members was 4.05. The corresponding standard deviations were 0.71 and 0.64 respectively.

The reliability of this rating scale was estimated by randomly dividing the two sets of ratings in half and correlating item values in one half with values given for the same items in the other half. The reliability coefficient was .95.

Imagery

The norms for rated Imagery were collected from 105 introductory psychology students at Vanderbilt University in the Fall of 1965. The stimulus members of each of the 120 pairs were presented to a group of 57 students (37 males and 20 females), and the response terms from each pair to a group of 48 students (27 males and 21 females). The words were listed in a mimeographed booklet and each word was typed above a seven-point scale, as, for example,

prison
: 1 : 2 : 3 : 4 : 5 : 6 : 7 :

The subject was asked to rate each word according to the ease and speed with which it aroused a sensory image or mental picture. The task was illustrated with the following example:

"Suppose that you were given the word 'apple'. This would probably arouse a sensory image very quickly and very easily. You can readily imagine a round object with a glossy red hue. You might also note that the object has an indentation at the top and that a small stem sticks out at this location. There are perhaps portions of the surface that have a more greenish tinge as compared to the bright red of the other parts. In addition, you might be reminded of the sharp crack that results from taking a bite of an apple--and also the crunchy texture and tangy flavor that you notice in your mouth when eating an apple. In short, you have

a very strong sensory image associated with the word 'apple'. You would indicate this by checking the position marked '7' on the scale for that word:

: 1 : 2 : 3 : 4 : 5 : 6 : 7 :

The last page of the booklet was detachable and described the seven-point scale in the following manner:

"This is the rating scale to be used in your judgments of sensory imagery. Keep it in front of you as you look at each pair.

: 1 : 2 : 3 : 4 : 5 : 6 : 7 :

The numbers under the scale position are to be interpreted like this:

1. extremely difficult--image aroused after long delay, or not at all
2. difficult
3. below the average word
4. about the same as the average word
5. above the average word
6. easy
7. extremely clear--image aroused immediately"

Before rating any of the words, each subject was asked to read through the first 30 words to get a "feel" for the nature of the task. No time limit was placed on the task, but subjects were discouraged from lingering over items.

Each of the 240 items from the pairs has thus been rated by at least 48 students. The mean scale values are listed in column two of Table A-1.*

The reliability of this rating scale was estimated by dividing the scale in half by an odd-even split and correlating item values in one half with values in the other half. The reliability coefficient was .91..

*For the 120 stimulus members of the word-pairs, the overall mean rating was 5.13. The overall mean for response members was 5.07. The corresponding standard deviations were 0.49 and 0.80 respectively.

Evaluation

The ratings for Evaluation were gathered from incoming freshmen during orientation week in September, 1965. The 240 words were grouped into 6 sets of 40 words and each set was included in a booklet which also contained sections of the Noun Association, Adjective Association and Frequency of Usage tasks. 900 students participated in the complete test, 640 of whom were males and 259 were females. The proportion of males and females was approximately the same in all groups.

The 40 words were printed on two pages of a mimeographed booklet. At the top of each page was the following ten-point scale which the students were to use as a reference scale for making their judgments.

Unpleasant : $\frac{1}{1}$: $\frac{2}{2}$: $\frac{3}{3}$: $\frac{4}{4}$: $\frac{5}{5}$: $\frac{6}{6}$: $\frac{7}{7}$: $\frac{8}{8}$: $\frac{9}{9}$: $\frac{10}{10}$: Pleasant

Each word on the page was followed by a similar scale, as for example:

Unpl : $\frac{1}{1}$: $\frac{2}{2}$: $\frac{3}{3}$: $\frac{4}{4}$: $\frac{5}{5}$: $\frac{6}{6}$: $\frac{7}{7}$: $\frac{8}{8}$: $\frac{9}{9}$: $\frac{10}{10}$: Pl

MONEY

Students were instructed to rate the words for evaluation in the following manner:

"We want you to look at each word in the list and judge whether you consider the object to which the word refers to be pleasant or unpleasant and how much. Then you are to check the scale point that you decide is appropriate for each word.

"To help clarify the task, we will consider some examples. Suppose that you were given the word VOMIT. You might consider the object to which this word refers very unpleasant. You would then mark position 1 on the scale:

Unpl : $\frac{X}{1} : \frac{\quad}{2} : \frac{\quad}{3} : \frac{\quad}{4} : \frac{\quad}{5} : \frac{\quad}{6} : \frac{\quad}{7} : \frac{\quad}{8} : \frac{\quad}{9} : \frac{\quad}{10} : \text{Pl}$

On the other hand, suppose the word had been STEAK. You would probably judge a steak to be very pleasant. You would then mark position 10 on the scale:

Unpl : $\frac{\quad}{1} : \frac{\quad}{2} : \frac{\quad}{3} : \frac{\quad}{4} : \frac{\quad}{5} : \frac{\quad}{6} : \frac{\quad}{7} : \frac{\quad}{8} : \frac{\quad}{9} : \frac{X}{10} : \text{Pl}$

Other words will fall at one of the middle points on the scale. One such word might be SHELF. You might find a shelf very faintly pleasant, in which case you would mark the scale thus:

Unpl : $\frac{\quad}{1} : \frac{\quad}{2} : \frac{\quad}{3} : \frac{\quad}{4} : \frac{\quad}{5} : \frac{X}{6} : \frac{\quad}{7} : \frac{\quad}{8} : \frac{\quad}{9} : \frac{\quad}{10} : \text{Pl}$

"Your task then is to judge the object each word refers to as pleasant or unpleasant. You are then to indicate the degree to which it is pleasant or unpleasant by marking the appropriate point on the scale."

Before starting the ratings, subjects were asked to read through the 40 words to get the "feel" of how the ratings distributed themselves. Subjects were urged to make their judgments carefully but not to spend too much time on each word.

The mean scale value for each of the 240 words appears in column 3 of Table A-1. Each of the values is based upon a rating by 150 students.*

The reliability of this scale was estimated by randomly dividing the protocols from the 900 subjects in half and correlating item values in one half with values given for the same items in the other half. The reliability coefficient was .99.

*For the 120 stimulus members of the word-pairs, the overall mean rating was 6.01. The overall mean for response members was 5.86. The corresponding standard deviations were both 1.95.

Frequency of Usage

The ratings for Frequency of Usage were obtained from incoming freshmen during orientation week in September, 1965. The 240 words were grouped into 6 sets of 40 words and each set was included in a booklet which also contained sections of the Noun Association, Adjective Association and Evaluation tasks. 150 students received each booklet. Of the total of 900 students, 641 were males and 259 were females. The ratio of males to females was approximately the same for all groups.

The 40 words were printed on two pages. At the top of each page was a seven-point scale which students were to use as a reference in making their judgments:

Very low frequency : 1 : 2 : 3 : 4 : 5 : 6 : 7 : Very high frequency
Medium frequency

Each word on the page was followed by a similar scale, as, for example:

Lo: 1 : 2 : 3 : 4 : 5 : 6 : 7 : Hi
PEACE

Students were instructed to rate the words for frequency in the following manner:

"This is a test to see how often you come in contact with certain words. Think for a moment about the word GLASS. How often do you encounter the word GLASS in print, conversation, in listening to radio or watching TV, etc.? You probably feel that you have seen or heard or used GLASS pretty frequently. You can indicate

this on the scale by checking position 6:

Very low : 1 : 2 : 3 : 4 : 5 : X : 7 : Very high
frequency frequency
Medium
frequency

If you come in contact with GLASS very often, you might check position 7:

Very low : 1 : 2 : 3 : 4 : 5 : 6 : X : Very high
frequency frequency
Medium
frequency

Now think for a moment of the word MEGAPHONE. When you think of all the words you encounter each day, the frequency of MEGAPHONE is low relative to the frequency of most other words. You might check position 1 on the scale for MEGAPHONE:

Very low : X : 2 : 3 : 4 : 5 : 6 : 7 : Very high
frequency frequency
Medium
frequency

For each word consider how often you encounter that word, relative to other words, and check the appropriate position on the scale."

Before starting the ratings, subjects were asked to read through the 40 words to get the "feel" of how the ratings were distributed. Subjects were urged to make their judgments carefully but not to spend too much time on each word.

The mean scale value for each of the 240 words appears in column 4 of Table A-1. Each value is based upon a rating by 150 subjects.*

The reliability of this scale was estimated by randomly dividing the protocols from the 900 subjects in half and correlating item values in one half with values given for the same items in the other half. The reliability coefficient was .99.

*For the 120 stimulus members of the word-pairs, the overall mean rating was 3.61. The overall mean for response members was 3.67. The corresponding standard deviations were 1.34 and 1.38 respectively.

Thorndike-Lorge Frequency

The values for Thorndike-Lorge frequency are the common logarithms of the frequency values given in the L count of the Thorndike-Lorge word count (25), based upon a survey of popular magazines. The particular count was chosen over the more commonly used G count because it provides a greater range of values and it gives a numerical value for all words.

The values for log Thorndike-Lorge frequency appear in column 5 of Table A-1. For the 120 stimulus members of the word-pairs, the overall mean log frequency was 2.36. The overall mean for response members was 2.31. The corresponding standard deviations were 0.67 and 0.66 respectively.

TABLE A-1

MEAN SCALE VALUES FOR RATED MEANINGFULNESS, RATED IMAGERY,
 RATED EVALUATION, RATED FREQUENCY OF USAGE AND LOG THORNDIKE-
 LORGE FREQUENCY FOR 240 WORDS

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
ALLIGATOR	3.45	5.17	3.01	1.54	1.64
ANTLERS	2.65	5.16	5.48	1.37	0.48
APE	3.36	5.14	3.81	1.82	0.95
APPLE	3.58	6.32	7.68	4.02	2.34
ASH	3.22	4.39	2.89	2.79	2.16
ATHLETE	4.95	5.42	7.75	4.49	1.52
AUTOMOBILE	5.31	6.44	8.76	5.73	2.68
AX	3.31	5.37	3.78	1.84	1.72
BABY	4.80	5.70	7.80	3.82	3.16
BACON	3.64	5.71	7.24	3.89	2.05
BALL	4.53	5.88	7.30	1.85	2.70
BANDIT	3.40	4.21	2.15	1.94	1.81
BANKER	3.71	4.18	6.81	2.88	2.18
BARN	4.47	5.96	6.00	2.72	0.95
BED	4.76	5.78	9.01	5.75	3.09
BEE	3.25	6.05	3.17	3.19	2.24
BEGGER	3.76	4.52	2.18	2.03	1.80
BIRD	4.27	5.54	7.07	4.60	2.59

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
BOAT	4.51	5.74	8.27	3.85	2.78
BOOK	5.40	5.79	7.31	6.37	2.84
BOTTLE	4.16	5.71	6.30	5.30	2.60
BOW	3.69	5.04	6.07	2.61	2.54
BOWL	3.40	5.29	5.87	3.60	2.43
BOY	4.80	5.39	7.56	5.71	3.20
BRICK	3.24	5.46	5.01	3.21	2.30
BRIDGE	3.84	5.75	6.47	4.02	2.67
BROTHER	4.84	5.42	8.23	4.89	2.82
BRUSH	3.84	5.19	6.29	4.57	2.61
BUG	3.65	4.70	2.98	4.01	1.53
BULLET	3.98	5.42	3.30	2.85	2.12
BUTTER	3.24	5.58	6.73	4.16	2.73
BUTTERFLY	3.38	5.75	7.43	2.02	1.81
BUTTON	3.05	5.18	5.46	3.90	2.29
CAN	3.53	5.92	5.07	4.83	3.83
CAR	4.86	6.00	8.59	6.46	3.35
CARPET	3.29	5.58	7.50	3.58	2.22
CASTLE	4.27	5.25	7.63	1.70	2.11
CAT	4.33	5.79	5.69	3.25	2.49
CEILING	2.93	4.96	5.19	3.64	2.25
CHEESE	3.25	5.54	6.61	3.10	2.43

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Evaluation	Frequency of Usage	Log Thorndike- Lorge Frequency
CHILD	4.82	5.26	7.54	4.50	3.20
CHURCH	4.95	5.73	7.67	5.21	2.74
CITIZEN	4.82	3.44	6.81	3.65	2.52
CITY	4.93	5.60	6.86	4.99	3.10
CLAW	3.62	4.71	2.28	1.84	1.78
CLAY	3.29	4.40	4.72	1.87	2.03
CLOCK	4.25	5.40	5.65	5.09	2.37
CLOSET	3.38	4.74	5.03	4.48	2.21
CLOTHING	4.95	4.96	7.96	5.54	2.30
COAT	3.95	5.65	6.87	5.27	2.95
COFFEE	3.91	5.92	5.46	5.42	2.76
CORN	3.31	5.53	6.85	3.43	2.36
COURT	4.38	4.46	5.07	3.34	2.85
CROCODILE	2.98	5.04	2.81	1.27	0.85
CROWD	4.35	5.09	4.70	4.43	2.93
CURRENCY	4.23	5.00	3.35	2.93	1.61
DAGGER	3.84	5.32	2.95	1.64	1.04
DAWN	4.78	5.06	8.20	2.64	2.38
DEER	3.53	5.42	7.94	2.58	1.67
DEVIL	4.05	3.75	2.11	2.70	2.35
DIAMOND	4.47	5.68	8.51	2.52	2.40
DOCTOR	5.09	5.53	6.61	4.33	3.21

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
DOG	4.35	6.02	7.85	5.21	2.91
DREAM	4.71	3.51	8.07	3.02	2.97
DUCK	3.71	5.44	6.26	2.31	2.25
DUST	3.58	4.63	2.00	3.45	2.49
EAGLE	3.75	5.32	6.22	1.90	2.00
EGG	3.95	5.92	5.84	4.95	2.93
EMBLEM	3.78	3.72	6.28	2.13	1.18
ENEMY	4.16	3.23	1.48	3.87	2.95
ENGINE	3.93	4.58	6.23	3.36	2.42
ENVELOPE	3.38	5.48	6.63	4.53	2.34
FARM	4.42	5.89	7.12	3.28	2.92
FIELD	4.65	5.33	7.58	3.85	2.82
FIG	2.44	4.28	4.77	1.47	1.79
FINGER	4.02	5.90	6.33	4.01	2.93
FISH	3.42	5.21	6.01	3.04	2.78
FOOL	3.78	3.17	2.30	3.45	3.06
FOOT	3.75	5.32	5.37	4.07	2.70
FRIEND	5.28	4.89	9.43	6.26	3.41
FROST	4.22	5.00	5.36	2.55	1.98
FRUIT	4.33	5.13	8.08	4.75	2.80
GARBAGE	3.53	4.95	1.42	3.49	1.46
GENIUS	4.45	3.53	7.02	3.37	2.20

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
GERM	3.77	2.96	1.80	3.40	1.57
GIANT	3.89	4.74	4.16	2.26	2.03
GIN	4.20	4.44	4.63	2.93	1.71
GIRL	5.47	5.96	9.08	6.69	3.61
GLOVE	3.29	5.23	6.12	2.86	2.22
GOD	5.91	3.51	9.00	5.45	2.85
GOLF	4.02	5.04	7.12	4.17	2.44
GOOSE	3.02	4.51	5.02	1.69	1.74
GOVERNOR	3.98	4.23	5.49	3.90	2.30
GRAPE	3.44	5.74	7.56	3.05	1.94
GUN (Stimulus)	4.55	6.00	4.33	3.70	2.84
GUN (Response)	4.25	5.35	5.25	3.64	2.12
HAMMER	3.24	5.82	5.01	2.84	2.03
HAND	4.45	5.70	7.19	5.26	3.52
HARBOR	3.95	4.42	6.93	2.13	2.22
HAT	3.33	5.14	5.07	3.62	2.99
HATCHET	3.45	5.17	4.01	1.56	0.60
HEAD	4.87	5.26	6.85	5.10	3.70
HILL	4.73	5.65	7.14	3.59	2.53
HONEY	3.95	5.67	7.65	2.68	2.44
HOURL	3.80	2.88	5.36	5.17	3.40
HUT	3.55	4.42	4.57	1.47	1.62

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
INK	3.40	4.96	5.03	3.83	1.74
INSECT	3.82	5.04	2.64	3.70	1.96
INVALID	4.07	4.02	2.62	2.07	1.75
JAIL	3.82	5.32	1.80	2.77	2.27
JEWEL	4.18	5.21	8.16	2.71	2.18
JUSTICE	4.91	3.07	7.98	3.62	2.26
KID	4.33	4.00	5.70	4.30	2.90
KING	4.09	4.65	6.20	2.97	2.59
KITCHEN	4.55	5.69	7.63	5.65	2.98
KNIFE	3.69	5.63	4.78	4.08	2.40
LABEL	3.36	4.04	5.18	3.48	1.95
LAKE	5.18	6.08	8.55	4.23	2.61
LAMP	3.51	5.10	6.61	5.04	2.43
LEAF	4.09	6.29	6.64	3.08	2.19
LETTUCE	2.87	5.23	6.37	2.72	2.15
LIBRARY	4.64	5.63	6.97	4.57	2.64
LION	3.69	5.98	4.04	2.08	2.05
LIP	4.04	5.47	6.81	2.97	2.96
LIZARD	2.84	5.19	3.37	1.76	1.08
LOAFER	3.87	4.65	3.39	3.91	1.26
LOBSTER	3.71	5.08	6.59	2.16	1.65

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
LUNATIC	4.02	3.61	1.90	1.59	1.26
MAID	4.16	4.85	6.70	3.31	2.54
MAN	5.45	5.90	7.87	6.49	3.87
MEADOW	4.69	5.46	8.48	1.99	1.85
MICROBE	3.16	2.33	4.08	1.50	1.04
MIDGET	2.87	4.29	3.76	1.54	1.45
MILK	3.53	5.47	7.75	5.51	2.82
MINISTER	4.09	5.06	7.55	3.92	2.36
MINNOW	2.75	5.02	5.11	1.73	0.30
MINUTE	3.73	3.06	5.45	5.95	3.37
MOB	4.44	4.69	1.89	2.83	1.92
MONEY	5.16	5.94	8.96	6.54	3.49
MONKEY	3.62	5.17	5.67	2.18	1.81
MOON	4.51	5.86	8.11	4.03	2.45
MORNING	4.44	4.79	7.22	5.64	3.30
MORON	2.95	3.06	1.21	1.65	0.00
MOTHER	5.36	5.96	9.08	6.21	3.60
MOUNTAIN	4.49	5.74	7.78	3.71	2.46
MOUSE	3.44	4.94	3.03	1.87	1.68
NECKLACE	3.69	5.15	7.31	3.17	1.81
NEEDLE	3.62	5.89	3.87	2.87	1.94
NIGHT	5.44	5.38	7.86	5.43	3.53

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
OCEAN	4.91	6.00	8.10	3.40	2.07
OIL	3.60	4.98	4.68	3.54	2.73
ORANGE	3.44	5.86	8.06	3.31	2.55
ORGAN	4.38	5.25	6.95	2.70	2.08
OYSTER	3.04	4.33	4.25	1.83	2.24
PAINT	3.69	5.74	4.96	3.39	3.04
PAN	3.15	5.06	5.30	3.74	2.58
PAPER	4.04	4.93	5.84	5.84	3.09
PARTY	5.60	5.48	9.05	5.60	3.16
PEACE	5.00	2.92	8.44	5.07	2.67
PEAR	3.31	5.88	6.34	2.31	2.34
PEARL	3.80	5.47	7.97	2.41	1.81
PEN	3.65	5.33	6.45	4.80	2.16
PENCIL	3.62	5.96	5.51	5.70	2.27
PEOPLE	5.82	4.85	7.84	6.35	3.55
PEPPER	2.95	5.04	4.55	4.19	2.45
PHYSICIAN	4.95	5.71	6.85	3.89	2.28
PIT	3.55	5.15	2.66	1.65	1.91
POT	3.20	4.54	5.21	2.83	2.37
PRIEST	4.33	5.07	6.57	3.05	1.89
PRISON	3.91	5.52	1.40	2.56	2.41
RABBIT	3.75	5.69	6.70	2.85	1.98

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
RADIO	4.35	5.77	8.21	5.82	2.59
RAIN	4.69	5.61	5.92	5.57	2.57
RECORD	4.87	5.52	8.32	5.70	2.71
REPTILE	3.67	4.23	3.04	1.83	1.15
RESIDENT	3.75	3.19	6.10	3.42	1.67
RIBBON	3.84	5.19	6.80	2.98	2.17
RIFLE	3.60	5.40	5.50	2.91	2.26
RING	4.47	5.44	7.54	4.54	2.79
RIVER	4.44	5.88	7.59	4.62	2.66
ROAD	4.89	5.58	6.73	6.09	3.08
ROOM	4.15	5.46	6.85	6.04	3.58
ROSE	4.44	6.04	8.33	3.29	2.90
SAINT	4.20	3.54	7.66	2.25	2.07
SALT	3.38	5.44	6.41	5.12	2.83
SAW	3.58	5.06	4.66	2.53	3.39
SCOUT	3.76	4.56	6.13	2.35	2.03
SEA	5.25	5.92	8.26	4.03	2.77
SHEEP	2.84	5.25	5.25	2.39	1.93
SHELL	4.02	4.98	5.98	1.88	2.34
SHIP	4.56	5.23	7.31	3.39	2.83
SHIRT	4.22	5.71	7.24	5.63	2.42
SHOE	3.75	5.52	6.97	5.95	2.73

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
SINK	3.45	5.02	4.37	3.65	2.31
SINNER	4.02	2.71	2.40	2.88	1.30
SISTER	4.60	5.13	7.88	4.87	2.77
SKIRT	4.35	5.79	7.90	4.49	2.47
SMOKE	4.27	5.60	3.58	4.71	2.74
SNAKE	3.62	5.74	2.45	2.50	1.79
SOAP	3.49	5.51	7.14	4.76	2.28
SOLDIER	4.82	5.12	5.16	4.47	2.41
SPIDER	3.42	5.84	2.38	2.66	1.62
STAMP	3.78	5.49	6.09	4.49	2.42
STARS	4.82	5.98	8.67	3.52	2.72
STEAM	3.58	4.85	4.55	3.02	2.29
STEP	3.67	4.19	5.15	3.71	3.15
STORE	4.60	5.02	6.82	5.91	2.95
STOREHOUSE	3.27	3.44	5.00	2.05	0.90
STORM	4.95	5.27	4.60	4.37	2.59
STOVE	3.42	5.49	6.08	3.69	2.30
STREET	4.42	4.79	6.11	5.87	3.08
SUMMER	5.36	5.16	9.01	5.41	2.89
SYRUP	3.25	5.17	6.50	2.79	1.40
TELEVISION	4.56	6.02	6.97	5.64	1.15
TENNIS	3.84	5.60	7.44	3.70	2.33

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
THIEF	3.76	3.75	1.80	2.97	1.81
THORN	3.29	5.06	2.24	2.00	1.45
THUNDER	4.15	4.95	5.28	3.49	2.14
TIGER	4.25	5.85	3.95	2.55	2.01
TOBACCO	3.69	5.39	3.33	3.62	2.06
TOMATO	3.62	5.96	7.06	3.84	2.22
TOWN	4.93	5.06	7.09	5.09	3.21
TRIGGER	3.84	5.04	3.85	2.42	1.32
TROUT	3.56	4.90	7.19	2.08	1.46
TURTLE	3.05	5.42	5.04	1.97	1.32
TYPEWRITER	3.95	5.82	5.94	3.79	2.03
VINE	3.73	4.98	5.87	2.04	2.08
WAFFLE	2.95	5.88	6.69	2.45	1.72
WATCH	4.00	5.54	7.56	5.19	3.24
WATER	5.09	5.23	8.65	6.62	3.32
WEDDING	5.16	5.40	8.52	3.38	2.64
WHALE	3.27	4.85	4.88	1.41	1.26
WHISKEY	4.31	4.98	4.22	3.87	1.99
WIDOW	3.96	3.83	3.64	2.14	2.26
WINDOW	3.49	3.38	7.09	5.35	1.18
WOMAN	5.29	5.79	8.94	5.81	3.39

TABLE A-1 Continued

Word	Meaning- fulness	Imagery	Eval- uation	Frequency of Usage	Log Thorndike- Lorge Frequency
WOOL	3.78	4.90	6.35	4.09	2.26
WORKER	4.25	4.18	5.29	4.55	2.63
WORM	3.25	5.35	3.25	2.17	1.79
YOLK	2.55	4.67	4.24	1.73	1.46

APPENDIX B

MEAN SCALE VALUES FOR RATED WORD
SIMILARITY, RATED CO-OCCURRENCE OF
THE REFERENTS, RATED SYNTACTIC CO-
OCCURRENCE AND RATED EASE OF LEARN-
ING FOR 120 PAIRS

Word Similarity

The ratings for Word Similarity were obtained from students in an introductory psychology course at Vanderbilt University in January of 1964. The 120 word-pairs were presented in mimeographed booklets printed in two forms: forward, as in "Pen-Ink", and backward, as in "Ink-Pen". The forward form of the 120 pairs was presented to 33 students (21 males and 12 females) and the backward form to 30 students (18 males and 12 females). The total of 63 students was thus composed of 39 males and 24 females. In both forms of presentation the pairs occupied four pages, which were organized in four random orders.

Each word-pair in the booklet was followed by a seven-point scale. Subjects were instructed to look at each pair of words and judge how similar the two words were in meaning, then check the appropriate scale value. To clarify the task the following examples were given:

"Suppose that you were given the pair 'child-youngster'.

These words are clearly very similar in meaning and you might mark the scale under this pair like this:

child - youngster
: $\frac{\quad}{1}$: $\frac{\quad}{2}$: $\frac{\quad}{3}$: $\frac{\quad}{4}$: $\frac{\quad}{5}$: $\frac{\quad}{6}$: $\frac{X}{7}$:

On the other hand, suppose the pair had been 'beggar-millionaire'. You would most probably judge this pair to be quite dissimilar in meaning and your decision would be recorded like this:

beggar - millionaire

: $\frac{X}{1}$: $\frac{\quad}{2}$: $\frac{\quad}{3}$: $\frac{\quad}{4}$: $\frac{\quad}{5}$: $\frac{\quad}{6}$: $\frac{\quad}{7}$:

Other pairs will fall at one of the middle values of the scale. One such pair might be 'lady-hat'. These two words have some 'meaning' in common, but obviously they also differ in many ways. You could indicate this by checking as follows:

lady - hat

: $\frac{\quad}{1}$: $\frac{\quad}{2}$: $\frac{\quad}{3}$: $\frac{X}{4}$: $\frac{\quad}{5}$: $\frac{\quad}{6}$: $\frac{\quad}{7}$:

Subjects were instructed to use the detachable, last page of the booklet as a reference for their ratings. It described the scale as follows:

"This is the rating scale to be used in your judgments of word similarity. Keep this scale in front of you as you rate each pair.

very dissimilar in meaning	:	$\frac{\quad}{1}$:	$\frac{\quad}{2}$:	$\frac{\quad}{3}$:	$\frac{\quad}{4}$:	$\frac{\quad}{5}$:	$\frac{\quad}{6}$:	$\frac{\quad}{7}$:	very similar in meaning"	
								moderate similarity in meaning									

Before starting the ratings, subjects were asked to read through the first 30 pairs to get the "feel" of how the ratings distributed themselves. Subjects were urged to make their judgments carefully but not to spend too much on each pair.

The mean scale values for the 120 pairs appear in column 1 of Table B-1. Each of the values is based on a rating by at least 30 subjects.*

The reliability of this scale was estimated by correlating item values from the forward form with those from the same items in the backward form of the rating task. The product-moment correlation was .98.

*When the 120 pairs were presented in their forward order, the overall mean rating was 4.16. In the backward presentation, the mean was 4.30. The corresponding standard deviations were 1.50 and 1.52 respectively.

Co-occurrence of the Referents

The ratings for Co-occurrence of the Referents were obtained from students in an introductory psychology course in January, 1964 at Vanderbilt University. The 120 word-pairs were presented in mimeographed booklets printed in two forms: forward, as in "Pen-Ink", and backward, as in "Ink-Pen". The forward form of the 120 pairs was presented to 31 students (18 males and 13 females) and the backward form to 29 students (15 males and 14 females). The total of 60 students was thus composed of 33 males and 27 females. In both forms of presentation the pairs occupied four pages, which were organized in four random orders.

Each of the 120 pairs was followed by seven-point scale. The instructions included the following explanation of the task:

"Think for a moment about the words 'dog-bone'. Ask yourself this question--If I should see a dog coming down the street, playing in a yard, or running across a field, what is the likelihood or probability that I would also see a bone in the picture? You might judge that the probability is 50 per cent or 80 percent or some other value. Suppose you decided upon 80 per cent. Then you would check the scale position corresponding to that value. In this case it would be position 6 as in this example:

: 1 : 2 : 3 : 4 : 5 : 6 : 7 :

since 80 per cent falls in the range 70-95 per cent represented by that scale value.

Now suppose that the word-pair had been 'dog-earring'. In this case the likelihood that you would encounter a dog and that you would find an earring occurring at the same time is very low. You might decide in this case to select position 1 on the scale (0-5 per cent):

: $\frac{X}{1}$: $\frac{\quad}{2}$: $\frac{\quad}{3}$: $\frac{\quad}{4}$: $\frac{\quad}{5}$: $\frac{\quad}{6}$: $\frac{\quad}{7}$:

For each pair consider the occurrence of the object referred to by the left hand word of each pair. Then you are to estimate the probability that the object referred to by the right hand word will co-occur in the same spatial setting."

The last page of the booklet was detachable and subjects were asked to use it as a reference in their ratings. It contained the following explanation of the scale:

"This is the rating scale to be used in your judgments of co-occurrence. Keep it in front of you as you look at each pair.

: $\frac{\quad}{1}$: $\frac{\quad}{2}$: $\frac{\quad}{3}$: $\frac{\quad}{4}$: $\frac{\quad}{5}$: $\frac{\quad}{6}$: $\frac{\quad}{7}$:

The numbers under the scale positions are to be interpreted like this:

1. 0 - 5 per cent
2. 5 - 30 per cent
3. 30 - 50 per cent
4. about 50 per cent

5. 50 - 70 per cent
6. 70 - 95 per cent
7. 95 - 100 per cent"

Before starting his ratings, each student was asked to read through the first 30 pairs and mentally assign one of the seven scale positions to each in order to get a "feel" for the task. He was encouraged to make his judgments carefully but not to spend too much time on each pair.

The mean scale values for the 120 pairs appear in column 2 of Table B-1. Each of the values is based on a sample of at least 29 subjects.*

The reliability of the rating scale was estimated by correlating item values from the forward form of the task with values from matching items in the backward form of the task. The product-moment correlation was .78.

*When the 120 pairs were presented in their forward order, the overall mean rating was 4.76. In the backward presentation, the mean rating was 4.38. The corresponding standard deviations were 1.46 and 1.50 respectively.

Syntactic Co-occurrence

The ratings for Syntactic Co-occurrence were collected from students in an introductory psychology course in the Fall of 1965 at Vanderbilt University. The 120 word-pairs were presented in mimeographed booklets printed in two forms: forward, as in "Pen-Ink", and backward, as in "Ink-Pen". The forward form of the 120 pairs was presented to 53 students (28 males and 25 females) and the backward form to 53 students (33 males and 20 females). The total of 106 students was thus composed of 61 males and 45 females. In both forms of presentation the pairs occupied four pages, which were organized in four random orders.

Each word-pair was typed above a seven-point scale. The instructions explained the task in the following manner:

"Think for a moment about the words 'dog-bone'. Look at the rating scale on the separate sheet and ask yourself this question--If I were to see a sentence with the word dog in it, how often would I also see the word bone in the same sentence. You might decide that this would happen 50% or 80% of the time-- or any other value.

Suppose that you decided that this would happen about 80% of the time. Then you would check the scale position corresponding to that value. In this case it would be position 6 as in the example:

: 1 : 2 : 3 : 4 : 5 : X : 7 :

since 80% falls in the scale position represented by '6'.

Now suppose that the word-pair had been 'dog-aardvark!'. In this case the likelihood that you would encounter the word aardvark and dog in the same sentence is very low. You might decide in this case to select position '1' on the scale which corresponds roughly to 0% to 5%.

: $\frac{X}{1}$: $\frac{\quad}{2}$: $\frac{\quad}{3}$: $\frac{\quad}{4}$: $\frac{\quad}{5}$: $\frac{\quad}{6}$: $\frac{\quad}{7}$:

For each pair consider how often the two words would appear in the same sentence. Remember, that we are not asking how often the two things named would appear together as elements in the environment. We are asking about the words--how often would the two words of the pair occur in the same sentence."

Subjects were instructed to detach the last page of the booklet and use it as a reference in their ratings. It described the scale in the following manner:

"This is the rating scale to be used in your judgments of co-occurrence. Keep it in front of you as you look at each pair.

: $\frac{\quad}{1}$: $\frac{\quad}{2}$: $\frac{\quad}{3}$: $\frac{\quad}{4}$: $\frac{\quad}{5}$: $\frac{\quad}{6}$: $\frac{\quad}{7}$:

The numbers under the scale positions are to be interpreted like this:

1. 0 - 5 per cent
2. 5 - 30 per cent
3. 30 - 50 per cent

4. about 50 per cent
5. 50 - 70 per cent
6. 70 - 95 per cent
7. 95 - 100 per cent"

Before starting his ratings, each student was asked to read through the first 30 pairs and mentally assign one of the seven scale positions to each in order to get a "feel" for the task. He was encouraged to make his judgments carefully but not to spend too much time on each pair.

The mean scale values for the 120 pairs appear in column 4 of Table B-1. Each of the values is based on a sample of 53 subjects.*

The reliability of the rating scale was estimated by correlating item values from the forward form of the task with values from matching items in the backward form of the task. The product-moment correlation was 0.93.

*When the 120 pairs were presented in their forward order, the overall mean rating was 3.27. In the backward presentation, the mean rating was 3.29. The corresponding standard deviations were 1.02 and 1.04 respectively.

Ease of Learning

The ratings for Ease of Learning were collected from students in an introductory psychology course in January, 1964 at Vanderbilt University. The 120 word-pairs were presented in mimeographed booklets printed in two forms: forward, as in "Pen-Ink", and backward, as in "Ink-Pen". The forward form of the 120 pairs was presented to 31 students (16 males and 15 females) and the backward form to 29 students (15 males and 14 females). The total of 60 students was thus composed of 31 males and 29 females. In both forms of presentation the pairs occupied four pages, which were organized in four random orders.

Each word-pair was followed by a seven-point scale. The instructions illustrated the task in the following manner:

"Think for a moment of the word pair 'table-chair'.

Suppose you were shown this pair typed on a card and told to study it so that you could recall it later.

Then suppose that at a later time you were shown a card with 'table' typed on it and asked which word went with table. Most probably you could easily recall that 'chair' was the word. If the pair had been 'table-wood' you might have found it a little more difficult to recall 'wood' as the correct response and if the pair had been 'basketball-ocean' you could experience considerable difficulty in remembering the right hand word of the pair.

For example, using the pairs mentioned above, you might decide to check as follows:

table - chair

$$:\frac{\quad}{1}:\frac{\quad}{2}:\frac{\quad}{3}:\frac{\quad}{4}:\frac{\quad}{5}:\frac{\quad}{6}:\frac{X}{7}:$$

table - wood

$$:\frac{\quad}{1}:\frac{\quad}{2}:\frac{\quad}{3}:\frac{X}{4}:\frac{\quad}{5}:\frac{\quad}{6}:\frac{\quad}{7}:$$

basketball - ocean

$$:\frac{X}{1}:\frac{\quad}{2}:\frac{\quad}{3}:\frac{\quad}{4}:\frac{\quad}{5}:\frac{\quad}{6}:\frac{\quad}{7}:$$

Look at each pair. If you judge it to be very difficult to learn, check position 1 on the scale and if you judge it to be very easy to learn, check position 7. Use the other points on the scale for items you judge to be of intermediate difficulty."

Subjects were instructed to detach the last page of the booklet and use it as a reference in their ratings. It described the scale in the following manner:

"This is the scale to be used in your judgments of ease of learning of the word pairs. Keep this scale in front of you as you rate each pair.

very
difficult
to learn
$$:\frac{\quad}{1}:\frac{\quad}{2}:\frac{\quad}{3}:\frac{\quad}{4}:\frac{\quad}{5}:\frac{\quad}{6}:\frac{\quad}{7}:$$
 very
easy
to learn"
medium
difficulty

Before starting the ratings, subjects were asked to read through the first 30 pairs and mentally rate them to get the "feel" of how the ratings distributed themselves. They were

further urged to make their ratings carefully but not to spend too much time on each pair.

The mean scale value for each of the 120 pairs appears in column 3 of Table B-1. Each value is based on a sample of at least 29 subjects.*

The reliability coefficient of this rating scale was estimated by correlating item values from the forward form of the scale with values from corresponding items in the backward form. The product-moment correlation was .85.

*When the 120 pairs were presented in their forward order, the overall mean rating was 5.00. In the backward presentation, the mean rating was 4.91. The corresponding standard deviations were 1.17 and 1.22 respectively.

TABLE B-1
 RATED WORD SIMILARITY, RATED CO-OCCURRENCE OF
 THE REFERENTS, RATED SYNTACTIC CO-OCCURRENCE AND
 RATED EASE OF LEARNING FOR THE 240 PAIRS

Pair	Word Similarity	Co- occurrence of the Referents	Ease of Learning	Syntactic Co- occurrence
Antlers - Deer	4.87	5.38	4.99	3.95
Ape - Monkey	6.19	4.76	5.29	3.11
Apple - Pear	4.46	3.03	4.04	2.35
Ash - Gin	1.72	2.21	1.41	1.33
Athlete - Invalid	1.16	1.59	3.54	1.51
Ax - Hatchet	6.56	4.79	5.93	2.66
Baby - Bottle	3.84	4.58	5.55	3.90
Ball - Golf	4.37	4.99	5.55	4.57
Bandit - Thief	6.60	5.83	5.43	2.38
Banker - Beggar	1.47	2.12	3.33	1.53
Bed - Lamp	2.99	4.87	4.09	2.80
Bee - Honey	4.57	4.72	6.47	5.00
Boat - Lake	4.15	5.89	5.13	4.33
Boy - Man	4.62	4.60	5.69	3.15
Brick - Clay	4.53	4.32	3.98	2.83
Bug - Insect	6.03	6.07	5.66	2.99
Bullet - Gun	4.77	5.90	5.99	4.42
Butter - Oil	4.73	4.02	3.47	2.28

TABLE B-1 Continued

Pair	Word Similarity	Co- occurrence of the Referents	Ease of Learning	Syntactic Co- occurrence
Butterfly - Worm	3.40	2.65	3.04	2.07
Button - Shirt	3.49	5.65	4.82	3.52
Car - Automobile	6.99	6.86	6.43	2.76
Carpet - Wool	3.67	4.12	3.69	3.08
Castle - Hut	1.48	2.09	3.64	1.69
Cheese - Mouse	3.80	3.61	5.61	3.74
Child - Kid	6.63	5.46	5.35	2.53
Citizen - Resident	5.40	5.82	3.69	2.59
City - Town	5.83	4.75	5.80	2.86
Claw - Lobster	4.60	5.21	4.48	3.38
Clock - Watch	6.42	4.52	5.95	3.02
Closet-Storehouse	4.66	3.18	3.08	2.17
Clothing - Store	3.65	4.75	4.58	3.70
Corn - Field	3.79	4.36	5.44	4.06
Court - Tennis	4.18	5.38	6.01	5.42
Crocodile-Alligator	5.81	3.59	6.13	2.82
Crowd - Mob	5.89	5.11	5.33	2.89
Currency - Money	6.72	6.53	5.32	2.77
Dagger - Knife	6.62	5.21	5.55	3.35
Diamond - Jewel	5.76	5.82	5.48	3.76
Doctor - Physician	6.81	6.69	6.26	2.89
Dog - Cat	2.81	3.81	6.84	3.73

TABLE B-1 Continued

Pair	Word Similarity	Co- occurrence of the Referents	Ease of Learning	Syntactic Co- occurrence
Dream - Night	4.20	5.16	4.43	3.79
Dust - Bowl	2.08	2.07	3.79	2.03
Eagle - Bird	5.68	4.15	4.80	2.81
Emblem - Label	5.21	4.11	3.11	1.99
Engine - Steam	3.97	3.39	5.39	3.30
Farm - Barn	4.68	6.30	4.65	3.62
Fig - Leaf	3.43	2.96	4.69	2.34
Fish - Trout	5.74	4.72	4.93	3.16
Foot - Shoe	4.34	6.18	5.90	4.01
Friend - Enemy	1.05	2.85	5.89	2.84
Garbage - Can	3.56	4.74	5.57	4.53
Genius - Moron	1.92	1.92	5.22	2.61
Germ - Microbe	5.69	4.81	4.30	2.87
Giant - Midget	1.17	2.96	5.58	2.61
Girl - Scout	3.39	3.19	5.67	3.21
Glove - People	1.82	3.30	1.62	1.42
God - Devil	1.19	3.02	5.74	3.25
Goose - Duck	5.58	3.62	5.05	2.66
Grape - Vine	4.38	4.41	6.09	4.36
Gun - Trigger	4.79	6.62	5.55	4.44
Hammer - Saw	4.09	5.10	5.02	3.47

TABLE B-1 Continued

Pair	Word Similarity	Co- occurrence of the Referents	Ease of Learning	Syntactic Co- occurrence
Hand - Finger	5.00	6.91	5.59	4.13
Harbor - Ship	3.94	5.86	5.39	4.50
Hat - Coat	4.14	5.00	6.20	4.17
Head - Organ	3.27	4.02	1.88	1.54
Hour - Minute	4.58	6.06	5.59	4.18
Jail - Prison	6.75	5.90	6.12	3.21
Justice - Peace	4.86	5.03	5.89	3.52
King - Governor	4.80	3.82	3.82	1.78
Lettuce - Tomato	3.79	4.59	5.48	4.74
Library - Book	5.01	5.90	5.77	5.23
Lion - Tiger	4.98	3.59	5.61	2.83
Lip - Bacon	1.37	1.97	1.46	1.10
Lizard - Reptile	5.84	5.67	4.68	3.12
Lunatic - Fool	5.09	4.02	4.02	2.35
Milk - Maid	2.77	2.49	4.38	2.22
Minnow - Whale	1.83	1.80	4.31	1.75
Moon - Stars	5.13	6.06	5.63	4.63
Morning - Dawn	6.05	5.85	5.30	3.29
Mother - Sister	3.96	3.72	4.49	3.06
Mountain - Hill	5.62	4.82	1.46	3.06
Needle - Record	3.72	4.71	4.38	3.19
Ocean - Sea	6.66	5.83	6.01	2.76

TABLE B-1 Continued

Pair	Word Similarity	Co- occurrence of the Referents	Ease of Learning	Syntactic Co- occurrence
Orange - Fruit	5.53	5.33	4.67	3.05
Oyster - Shell	3.85	4.81	5.20	4.28
Paint - Brush	4.35	5.40	5.98	4.55
Paper - Pencil	3.84	5.76	6.59	5.45
Pearl - Necklace	4.38	5.18	5.64	4.27
Pen - Ink	4.38	6.28	6.67	4.92
Pot - Pan	6.18	5.90	6.29	4.42
Priest - Minister	6.28	4.31	5.33	2.66
Radio - Television	4.69	4.48	6.11	4.03
Rain - Bow	2.73	2.12	4.84	3.12
River - Bridge	4.16	5.17	5.08	3.94
Room - Ceiling	3.84	3.74	3.74	2.88
Rose - Thorn	3.99	5.75	4.85	3.60
Saint - Sinner	1.23	3.23	5.98	2.95
Salt - Pepper	3.34	6.26	6.90	5.84
Sheep - Meadow	3.41	4.10	3.68	2.93
Sink - Kitchen	4.44	6.00	5.75	3.94
Snake - Pit	3.04	2.46	4.72	2.70
Soap - Water	3.75	5.10	5.80	4.61
Soldier - Rifle	4.11	4.96	5.01	4.45
Spider - Widow	2.77	1.77	3.59	2.23
Stamp - Envelope	4.49	5.92	5.41	4.54

TABLE B-1 Continued

Pair	Word Similarity	Co- occurrence of the Referents	Ease of Learning	Syntactic Co- occurrence
Step - Brother	1.96	1.64	3.31	1.88
Stove - Coffee	3.08	4.33	3.47	3.00
Street - Road	6.77	6.22	6.03	2.87
Summer - Church	1.69	2.82	1.92	1.47
Thunder - Storm	5.09	5.81	5.61	5.17
Tobacco - Smoke	4.84	5.91	5.89	4.64
Turtle - Rabbit	2.27	1.78	3.27	1.92
Typewriter-Ribbon	4.21	5.71	5.34	3.42
Waffle - Syrup	4.27	5.55	5.44	4.73
Wedding-Ring	4.65	5.73	5.83	4.40
Whiskey - Party	3.80	4.48	4.38	3.66
Window - Frost	2.92	3.04	3.10	2.59
Woman - Skirt	4.10	5.43	4.25	3.23
Worker - Loafer	1.23	3.37	3.97	2.19
Yolk - Egg	5.03	6.39	5.85	4.59

APPENDIX C

FREE ASSOCIATION NORMS FOR 240 WORDS

Free Association

The Free Association norms were collected from 350 incoming freshmen during orientation week in September, 1964 at Vanderbilt University. Two groups of students were each presented one half of the 240 words. The first group received the stimulus words from a random selection of 60 pairs and the response words from the remaining 60 pairs. The second group received the remaining 120 words. As a result, no student received both the stimulus and response members of any pair. Each group was composed of 350 students (240 males and 110 females).

The 120 stimulus words were randomized and listed vertically in a mimeographed booklet. Each word was followed by a horizontal line on which he was to write his association. The format and instructions followed closely those of Palermo and Jenkins (22). Instructions were given verbally:

"When I tell you to open your booklets you will find a list of words. You are to write next to each word the first word that it makes you think of. It doesn't make any difference what word you write as long as the word on the paper makes you think of it. There are no right or wrong answers. The purpose of the test is just to see how quickly words come to your mind.

For example, suppose that coat is the word you see. Your job will be to write down the first word that coat makes you think of. For example, coat might make you think of hat or man or wear or brown or big or warm or you might think of some other word. Whatever the word is that you think of, write it down next to coat.

You are to do the same thing for each word in the list. When I tell you to start, I want you to work straight down the list as fast as you can. When you finish a page, go right on to the next one. Write only one word on each line, but do not skip any words and be sure to write clearly. We are going to time you and at the end of each five minutes we will display the number of minutes that it is taking you to finish. When you get through with all the words on the list write the number that is displayed on the card on the back page of your test. That will tell us how long it took you to finish the test."

Each of the 240 words served as a stimulus to free association for 350 students. The response hierarchies for each stimulus word are contained in Table C-1. The hierarchies are arranged alphabetically by stimulus word. The identification number following each stimulus indicates the pair (see Table 1) to which the word belongs. Hierarchies for males and females are listed in parallel for ease

of comparison and the ease of comparing the different
responses. That is, associations listed in the same category are
not listed. The number of simple responses given to a particular
stimulus will be calculated by counting the number of different
and responses listed and subtracting from different responses
since this category has included simple as well.

TABLE C-1

FREE ASSOCIATION NORMS FOR 240 WORDS

Males (N=240)

Females (N=110)

ALLIGATOR

30 Crocodile
 21 Swamp
 16 Shoes
 14 Florida
 12 Crocadile
 10 Crocidile
 10 Teeth
 9 Green
 8 Animal, Reptile
 7 Bag
 6 Belt, Water
 5 Crockadile
 4 Mouth, Purse
 3 Dangerous, Hide, Leather,
 Lizard, Mean, Skin,
 Swamps
 2 Big, Crokodile, Eat,
 Everglades, Florida,
 Jaws, Pet, Tough, Wallet
 1 Illegible
 0 Blank
 240 Total Responses
 62 Different Responses

ANTLERS

135 Deer
 28 Horns
 15 Moose
 5 Ant
 4 Animal
 3 Buck, Elk, Feel, Horn,
 Hunting, Tree
 2 Beetle, Dear, Feelers,
 Hunt
 1 Illegible
 0 Blank
 240 Total Responses
 42 Different Responses

ALLIGATOR

17 Crocodile
 13 Shoes
 9 Florida
 8 Swamp
 7 Green
 5 Bag
 4 Purse
 3 Animal, Bite, Lizard, Reptile
 Teeth
 2 Big, Crocadile, Crocidile,
 Fish, River
 0 Illegible
 0 Blank
 110 Total Responses
 39 Different Responses

ANTLERS

67 Deer
 10 Horns
 5 Moose
 4 Reindeer
 3 Elk
 2 Animal, Ant, Raindeer
 0 Illegible
 0 Blank
 110 Total Responses
 23 Different Responses

TABLE C-1 Continued

(N=240)	Females (N=110)
APE	APE
139 Monkey	66 Monkey
32 Man	14 Man
17 Gorilla	6 Gorilla
9 Hairy	3 Animal, Hairy
6 Jungle	2 Banana, Hair, Stupid, Tarzan
5 Animal	0 Illegible
4 Hair, Tarzan	0 Blank
3 Tree	110 Total Responses
2 Evolution, Football	19 Different Responses
2 Illegible	
0 Blank	
240 Total Responses	
26 Different Responses	
APPLE	APPLE
40 Red	27 Red
36 Tree	21 Tree
24 Pie	11 Pie
21 Eat	8 Orange
20 Orange	5 Eat
17 Pear	4 Fruit, Juicy, Pear
13 Fruit	3 Doctor
8 Core	2 Cherry, Core, Leaf, Seed,
7 Cider	Worm
6 Food	0 Illegible
4 Good, Worm	0 Blank
3 Seed	110 Total Responses
2 Adam, Butter, Cart,	27 Different Responses
Teacher	
0 Illegible	
0 Blank	
240 Total Responses	
46 Different Responses	
ASH	ASH
68 Tray	37 Tray
42 Fire	17 Cigarette

TABLE C-1 Continued

Males (N=240)	Females (N=110)
ASH (cont.)	ASH (cont.)
28 Cigarette	12 Fire
26 Tree	7 Tree
9 Cigar, Smoke	4 Burn, Can, Cigar, Smoke
7 Can	2 Grey
5 Burn	1 Illegible
3 Dirty, Heap, Wednesday	0 Blank
2 Fireplace, Wood	110 Total Responses
2 Illegible	27 Different Responses
0 Blank	
239 Total Responses	
43 Different Responses	
ATHLETE	ATHLETE
65 Football	24 Football
14 Jock, Sports	11 Boy
12 Strong	9 Foot
10 Ball, Foot, Run, Track	8 Sports
7 Sport	7 Big
5 Boy	6 Ball, Run
4 Basketball, Me, Play	5 Muscles
3 Big, Fast, Man, Runner	4 Strong
2 Endurance, Game, Muscle, Player, Power, Shoe, Star, Stupid, Sweat, Training	3 Game, Play
0 Illegible	2 Basketball, Fast, Games, Gym, Sport
0 Blank	0 Illegible
240 Total Responses	0 Blank
66 Different Responses	110 Total Responses
	30 Different Responses
AUTOMOBILE	AUTOMOBILE
141 Car	58 Car
8 Tire	5 Gas
7 Drive	4 Tire
4 Chevy, Fast, Speed	3 Fast, XKE
3 Ford, New, Ride, Travel	2 Drive, Go, New, Oldsmobile, Traffic, Travel
2 Buick, Cadillac, Gas, Mustang, Tires, Truck	0 Illegible

TABLE C-1 Continued

Males (N=240)	Females (N=110)
AUTOMOBILE (cont.)	AUTOMOBILE (cont.)
0 Illegible	0 Blank
0 Blank	110 Total Responses
240 Total Responses	36 Different Responses
64 Different Responses	
AX	AX
36 Chop	20 Tree
34 Handle	17 Chop, Cut
24 Cut	10 Wood
23 Tree, Wood	9 Handle
16 Sharp	6 Hatchet
13 Hatchet	5 Saw
8 Blade, Hammer	4 Hammer
6 Knife	3 Kill, Sharp
5 Grind, Saw	2 Blade
2 Hatchet, Log, Murder, Stump	0 Illegible
2 Illegible	0 Blank
0 Blank	110 Total Responses
240 Total Responses	25 Different Responses
45 Different Responses	
BABY	BABY
35 Cry	20 Cry
26 Boy	10 Boy
20 Girl	7 Small
19 Sitter	6 Sitter
15 Small	5 Child, Mother
13 Child	4 Cute, Girl, Tiny
11 Bottle	3 Doll, Infant, Love, Sweet
9 Diaper	2 Blue, Carriage, Life, Little, Sit, Soft
8 Little	0 Illegible
6 Crib, Doll, Infant, Young	0 Blank
5 Carriage	110 Total Responses
4 Mother, Sit	40 Different Responses
3 Soft	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
BABY (cont.)	BABY (cont.)
2 Blue, Face, Gentle, Kid, Marriage, Noise, Pink	
0 Illegible	
0 Blank	
239 Total Responses	
53 Different Responses	
BACON	BACON
99 Eggs	41 Eggs
16 Food	15 Breakfast
1 Ham	13 Grease
1 Breakfast	7 Egg
11 Egg	5 Pig
11 Grease	4 Fat
8 Eat, Fat	3 Smell
7 Smell	2 Cheese, Crisp, Greasy, Ham
4 Good, Pig, Pork	0 Illegible
3 Crisp, Fry, Meat	0 Blank
2 Cheese, Frying, Greese, Lettuce, Rind, Salt	110 Total Responses
0 Illegible	25 Different Responses
0 Blank	
240 Total Responses	
40 Different Responses	
BALL	BALL
98 Bat	41 Bat
21 Game	13 Bounce
17 Bounce	9 Game
14 Round	5 Play
10 Base	4 Red
8 Pen, Point	3 Base, Pen, Round
7 Baseball	2 Cat, Football, Hit, Jacks, Party, Point
6 Foot	0 Illegible
4 Basket, Football, Glove	0 Blank
3 Bowl, Dance, Play, Tennis	110 Total Responses
2 Fun	31 Different Responses
1 Illegible	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
BALL (cont.)	BALL (cont.)
0 Blank	
239 Total Responses	
40 Different Responses	
BANDIT	BANDIT
45 Thief	22 Robber
40 Robber	11 Mask
24 Rob	11 Rob
16 Crook	8 Steal
12 Mask	7 Outlaw
11 Bad	5 Bad, Thief
11 Steal	4 Crook
5 Outlaw	3 Hold up, Holdup, Thief
4 Gun, Holdup	2 Bandana, Criminal, Gangster,
3 Crime, Jail, Thief	Gun, Jail
2 Badman, Cop, Cowboys,	0 Illegible
Criminal, Gang, Hold up,	0 Blank
Killer, Money, Robbery,	110 Total Responses
Stick up, Villa	34 Different Responses
3 Illegible	
2 Blank	
240 Total Responses	
56 Different Responses	
BANKER	BANKER
155 Money	84 Money
11 Bank	7 Bank
8 Lawyer, Man, Rich	3 Man, Rich
7 Teller	2 Teller
3 Fat	0 Illegible
2 Check, Clerk, Tall	0 Blank
1 Illegible	110 Total Responses
0 Blank	16 Different Responses
240 Total Responses	
43 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
BARN	BARN
47 Hay	18 Hay
22 Red	15 Red
21 Farm	13 Cow
17 Yard	10 Horse
15 Door	8 Door
14 Cow	7 Animals
12 Cows	6 Cows
9 Tobacco	5 Tobacco
7 House	4 Horses, Yard
6 Animals, Horse, Horses	3 Corn, Dance, House
5 Loft, Smell	2 Grain
4 Cattle, Corn	0 Illegible
3 Dance	0 Blank
3 Straw	110 Total Responses
2 Animal, Chicken, Store	23 Different Responses
Tobacco	
0 Illegible	
0 Blank	
240 Total Responses	
48 Different Responses	
BED	BED
115 Sleep	50 Sleep
13 Sheet	10 Spread
11 Sheets	5 Linen, Sheets, Soft
11 Spread	4 Sheet
9 Room	3 Comfortable, Mattress,
6 Sex, Soft	Pillow, Blanket, Board,
5 Post	Cover, Make, Rest
4 Hard, Rest	0 Illegible
3 Cover, Girl, Lay, Night	0 Blank
2 Clothes, Comfort, Feathers,	110 Total Responses
Pillow, Spring, Stead,	26 Different Responses
Time, Warm	
0 Illegible	
2 Blank	
240 Total Responses	
49 Different Responses	

TABLE C-1 Continued

Males (N=240)

BEE

101 Sting
 57 Honey
 18 Hive
 16 Bumble
 8 Buzz
 6 Insect
 5 Wasp
 4 Bug
 3 Fly, Line, Queen
 2 Flower
 1 Illegible
 0 Blank
 240 Total
 25 Different Responses

BEGGAR

84 Poor
 37 Money
 17 Bum
 7 Cup
 6 Mendicant, Thief
 5 Poverty, Tramp
 4 Man
 3 Dirty, Ragged, Rags
 2 Ask, Borrower, Fool,
 Give, Loafer, Pencils,
 Person, Shabby
 1 Illegible
 0 Blank
 239 Total
 62 Different Responses

BIRD

80 Fly
 10 Feather, Nest
 9 Air
 8 Dog
 7 Robin
 6 Sing, Wing
 5 Blue, Cat, Feathers
 4 Cage, Eagle, Gull,
 Plane, Seed, Song, Tree

Females (N=110)

BEE

41 Sting
 22 Honey
 19 Hive
 6 Bumble
 3 Bug, Buzz
 2 Yellow
 0 Illegible
 0 Blank
 110 Total
 21 Different Responses

BEGGAR

41 Poor
 11 Money
 8 Man
 5 Hungry
 4 Thief
 2 Ask, Food, Mendicant,
 Pauper, Poverty, Rags
 0 Illegible
 0 Blank
 110 Total
 39 Different Responses

BIRD

38 Fly
 7 Nest
 6 Robin
 5 Feather, Tree
 4 Sky, Song, Sparrow
 3 Cage, Dog, Feathers, Sing
 2 Blue, Red, Wing
 0 Illegible
 0 Blank

TABLE C-1 Continued

Males (N=240)	Females (N=110)
BIRD (cont.)	BIRD (cont.)
3 Bath, Bee, Call, Watcher, Wings	110 Total
2 Dove, Egg, Gun, Robbin, Seagull, Sky	34 Different Responses
0 Illegible	
0 Blank	
240 Total	
63 Different Responses	
BOAT	BOAT
66 Water	29 Sail
31 Sail	13 Water
24 Ship	9 Ship
22 Motor	8 Dock, Motor
18 Ski	7 Ski
11 Dock	3 Lake, Sailing, Skiing, Swim
6 Lake	2 Fun
4 Hook	0 Illegible
3 Fun, House, Oar, Outboard, Paddle, River,	0 Blank
2 Fish, Harbor, Row, Shore, Yacht	110 Total
1 Illegible	33 Different Responses
0 Blank	
239 Total	
47 Different Responses	
BOOK	BOOK
54 Read	34 Read
39 Shelf	18 Page
34 Page	10 Shelf
21 Store	8 Paper
12 Cover	5 Study
11 Pages	4 Cover, Pages
7 Paper	3 Mark
4 Study, Words	2 End
3 Novel, Print, Reading, Word	0 Illegible
2 Big, Case, End, Good, Library, Mark, Reed, Story, Work	0 Blank
	110 Total
	31 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

BOOK (cont.)

BOOK (cont.)

3 Illegible

0 Blank

239 Total

42 Different Responses

BOTTLE

BOTTLE

40 Beer

12 Beer

18 Coke, Ink, Milk, Top

10 Drink, Opener

17 Drink

9 Baby, Milk

14 Baby

7 Cap, Top

13 Glass

5 Coke, Glass

12 Opener

4 Can, Ink

9 Cap

3 Cork, Jar

5 Neck

2 Nipple, Stopper

4 Booze, Liquor, Whiskey

0 Illegible

3 Cork, Empty, Stopper,
Water, Wine

0 Blank

2 Gin, Green

110 Total

2 Illegible

33 Different Responses

1 Blank

240 Total

45 Different Responses

BOW

BOW

164 Arrow

31 Arrow

14 Tie

18 Hair

9 Stern

16 Ribbon

8 Ribbon

15 Tie

3 Hair, Ox, Ship, Wow

4 Wow

2 Arrows, Boat, Curtsy,
King, Scrape, Shoot

2 Boat, Curtsy, Dance

0 Illegible

0 Illegible

0 Blank

0 Blank

240 Total

110 Total

35 Different Responses

28 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

BOWL

30 Ball
 28 Cereal
 21 Dish
 15 Soup, Spoon
 11 Sugar
 7 Alley
 6 Cup, Game, Glass, Pins, Plate
 5 Food
 4 Milk, Pin, Rose, Salad, Water
 3 Round, Strike
 2 Cereal, Eat, Finger, Football,
 Fruit, Fun, Lane, Mix, Mixing,
 Pot, Saucer, Toilet, Wash
 1 Illegible
 0 Blank
 239 Total
 57 Different Responses

BOY

195 Girl
 8 Scout
 7 Man
 3 Brother, Dog
 2 Child, Kid, Male, Young
 0 Illegible
 0 Blank
 239 Total
 24 Different Responses

BRICK

61 House
 47 Red
 17 Mortar
 12 Building, Layer, Stone
 10 Mason
 8 Cement, Wall
 7 Build
 6 Bat
 4 Concrete, Hard
 3 Home
 2 Heavy, Old, Straw, Throw
 2 Illegible
 0 Blank
 240 Total
 37 Different Responses

BOWL

17 Spoon
 14 Ball
 9 Dish
 6 Cereal, Soup
 5 Cup
 4 Mix, Sugar
 3 Alley, Eat, Fruit,
 Mixing, Water
 2 Cake, Flowers, Food,
 Oatmeal, Round, Saucer
 0 Illegible
 0 Blank
 110 Total
 37 Different Responses

BOY

91 Girl
 2 Love
 0 Illegible
 0 Blank
 110 Total
 19 Different Responses

BRICK

38 House
 26 Red
 7 Stone
 6 Building
 5 Wall
 4 Bat
 3 Hard, Home, Layer, Mortar
 2 Mason
 0 Illegible
 0 Blank
 110 Total
 21 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

BRIDGE

51 River
 41 Cards
 28 Game
 25 Water
 14 Cross
 6 Crossing
 5 Span
 3 Contract, Draw, Steel,
 Suspension
 2 Across, Card, Cars, Gap,
 Goren, Large, London, Stream,
 Tunnel
 2 Illegible
 0 Blank
 239 Total
 57 Different Responses

BROTHER

164 Sister
 8 Big, Boy
 4 Family, Mother
 3 Friend, Little
 2 John, Kid, Man, Paul,
 Relation, Relative, Small
 0 Illegible
 1 Blank
 239 Total
 44 Different Responses

BRUSH

69 Hair
 45 Paint
 33 Comb
 18 Teeth
 16 Tooth
 6 Fuller
 4 Bristles, Clothes, Fire
 2 Bristle, Bush, Clean, Scrub,
 Soft, Tree
 44 Different Responses

BRIDGE

20 Cards, Water
 18 Game
 11 River
 9 Cross
 4 Table
 3 Play
 2 Draw
 0 Illegible
 0 Blank
 110 Total
 31 Different Responses

BROTHER

78 Sister
 4 Family
 3 Boy
 2 Bob, Mine
 0 Illegible
 0 Blank
 110 Total
 26 Different Responses

BRUSH

40 Comb
 29 Hair
 12 Paint
 4 Tooth
 3 Teeth
 2 Bristle
 0 Illegible
 0 Blank
 110 Total
 26 Different Responses

TABLE C-1 Continued

Males (N=240)	Females (N=110)
BUG	BUG
64 Insect	19 Insect
16 Juice	10 Ant, Spider
12 Ant	8 Juice
11 Beetle, Spider	7 Crawl
9 Rug	6 Beetle
8 Bee, Fly, Small	3 Bee, Bite, Small
5 Bite	2 Bed, Black, Bother,
4 Black, Roach	Rug, Six
3 Dirty, Kill, Spray,	0 Illegible
Worm	0 Blank
2 Animal, Bad, Beatle,	110 Total
Bettle, Car, Crawling, June,	45 Different Responses
Legs, Me, Mosquito, Squash	
1 Illegible	
1 Blank	
240 Total	
71 Different Responses	
BULLET	BULLET
152 Gun	72 Gun
15 Shoot	7 Shoot
8 Kill, Rifle	4 Kill, Wound
5 Death	3 Rifle
4 Lead, Powder, Wound	2 Death, Hurt, Pistol,
3 Cartridge	Shot
2 Danger, Deadly, Fire, Hurt,	0 Illegible
Proof, Shot	0 Blank
0 Illegible	110 Total
1 Blank	21 Different Responses
240 Total	
39 Different Responsee	
BUTTER	BUTTER
79 Bread	34 Bread
19 Knife, Yellow	13 Yellow
16 Fly	11 Knife
9 Toast	7 Toast
6 Fat, Grease, Margarine	6 Melt
5 Margerine, Melt, Milk	4 Fly
4 Plate, Soft	3 Soft
3 Dish, Food, Oleo, Spread	2 Dish, Fattening, Greasy,
	Plate

TABLE C-1 Continued

Males (N=240)	Females (N=110)
BUTTER (cont.)	BUTTER (cont.)
2 Ball, Cow, Cream, Eat, Flies, Good, Knife, Peanut	0 Illegible
0 Illegible	0 Blank
1 Blank	110 Total
239 Total	35 Different Responses
52 Different Responses	
BUTTERFLY	BUTTERFLY
34 Pretty	16 Pretty
30 Insect	11 Moth
21 Fly	10 Yellow
16 Moth	9 Beautiful
15 Net	6 Fly, Wings
10 Wings	4 Bird, Net
9 Spring	3 Beauty, Flutter, Free, Insect, Summer
8 Beautiful	2 Bug, Catch, Dainty, Flower, Graceful, Monarch
6 Bug, Yellow	0 Illegible
5 Beauty	0 Blank
4 Bird, Cocoon, Colorful, Flower	110 Total
3 Caterpillar, Color, Life, Monarch, Wing	36 Different Responses
2 Biology, Collection, Flowers, Flutter, Graceful, Light, Madam, Swimming	
0 Illegible	
0 Blank	
239 Total	
60 Different Responses	
BUTTON	BUTTON
87 Shirt	22 Hole
31 Coat	15 Shirt
27 Hole	10 Coat, Sew
19 Sew	8 Dress
10 Bow	7 Bow
7 Thread	5 Blouse
4 Clothes, White	4 Thread
3 Badge, Bows, Down, Pearl	3 Lost, Sweater
2 Bone, Eyes, Fasten, Needle, Off, Snap	2 Big, Buttonhole, Fasten, Red, Sewing

TABLE C-1 Continued

Males (N=240)

Females (N=110)

BUTTON (cont.)

0 Illegible
 0 Blank
 240 Total
 45 Different Responses

CAN

81 Opener
 36 Tin
 21 Food
 16 Open
 9 Beans
 6 Beer
 5 Bottle, Can, Oil
 4 Bathroom, Garbage
 3 Can't, Soup
 2 Corn, Do, Jail, Meat, Top
 0 Illegible
 3 Blank
 240 Total
 47 Different Responses

CAR

39 Drive
 16 Auto
 13 Fast
 9 Ride, Truck,
 6 Automobile, Go, Wheels
 5 Door, Speed
 4 Road, Run
 3 Bus, Engine, Keys, Red, Theft,
 Transportation, Wash, Wreck
 2 Blue, Buick, Chevy, Coat, Date,
 Driver, Ford, Fun, Gas, Gasoline,
 Motor, New, Pontiac, Street, Thief,
 Thunderbird, Tire, Train, Wheel
 1 Illegible
 5 Blank
 239 Total
 88 Different Responses

BUTTON (cont.)

0 Illegible
 0 Blank
 110 Total
 28 Different Responses

CAN

63 Opener
 10 Tin
 7 Open
 4 Soup
 3 Beans
 2 Container, Cover, Food,
 Garbage, Jar
 0 Illegible
 0 Blank
 110 Total
 23 Different Responses

CAR

21 Drive
 8 Auto
 5 Bus, Go
 4 Ride
 3 Automobile, Road, Transportation,
 Travel, Truck
 2 Boat, Fast, Motor,
 Move, Run, Wheels
 0 Illegible
 0 Blank
 110 Total
 56 Different Responses

TABLE C-1 Continued

Males (N=240)

CARPET

74 Rug
 29 Soft
 20 Floor
 16 Bagger
 13 Bag, Thick
 12 Red
 11 Baggers
 7 Tack
 5 Walk
 3 Room, Wall
 2 House, Plush, Warm, Wool
 2 Illegible
 1 Blank
 239 Total
 38 Different Responses

CASTLE

47 King
 18 Moat
 11 Fort
 10 House, Knight
 7 Big, Old, Stone
 6 Fortress, Home, Knights,
 Rock, Wall
 5 Mansion, Palace
 3 Building, Rich, Sky, Spain
 2 Chess, Dark, Dungeon, Heights,
 Hill, Huge, Large, Medieval,
 Mountain, Princess, Sand,
 Scotland, Tower
 1 Illegible
 0 Blank
 239 Total
 75 Different Responses

CAT

119 Dog
 54 Mouse
 6 Sly
 4 Bird
 3 Fur, Soft

Females (N=110)

CARPET

41 Rug
 15 Floor
 9 Red
 8 Soft
 6 Bagger
 5 Thick
 3 Bag, Tack
 2 Luxurious, Quiet
 0 Illegible
 0 Blank
 110 Total
 26 Different Responses

CASTLE

20 King
 7 Moat
 6 Home
 5 Beautiful, Tower
 4 House, Palace, Stone
 3 Big, Queen
 2 Sky, Stones, Story
 0 Illegible
 0 Blank
 110 Total
 56 Different Responses

CAT

54 Dog
 16 Mouse
 5 Purr
 4 Fur
 3 Black, Eyes

TABLE C-1 Continued

Males (N=240)

CAT (cont.)

2 Animal, Black, Claw,
Eyes, Fish, Kitten, Pet,
Pussy, Quick, Silent, Sneaky
0 Illegible
0 Blank
240 Total
46 Different Responses

CEILING

50 Roof
36 Floor
20 High, Top
18 Wall
13 Light, Room
11 White
7 Paint, Tile
5 Walls
4 Plaster
3 House, Sky, Up
2 Bed, Cracked, Height, Low
0 Illegible
0 Blank
239 Total
37 Different Responses

CHEESE

30 Cake
22 Milk
17 Eat, Mouse
14 Yellow
13 Swiss
12 Food
9 Green
8 Cracker, Crackers
6 Holes, Rat
4 Butter, Cloth, Sandwich
3 Bread, Cut, Knife, Mice
2 American, Blue, Hole, Moon,
Pie, Smell
57 Different Responses

Females (N=110)

CAT (cont.)

2 Bird, Sneak, Tail
0 Illegible
0 Blank
110 Total
28 Different Responses

CEILING

21 High
18 Floor, Roof
8 Wall, White
7 Light
5 Top
4 Room
2 Plaster, Sky
0 Illegible
0 Blank
110 Total
27 Different Responses

CHEESE

16 Yellow
9 Cake, Eat
6 Bread, Crackers, Good
4 Holes, Knife, Mouse
3 Cracker, Rat
2 Board, Food, Milk, Mold,
Sharp, Swiss
0 Illegible
0 Blank
110 Total
45 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

CHILD

26 Mother
24 Small
22 Kid
20 Baby, Young
18 Boy
8 Little
7 Father, Infant, Parent
5 Brother, Son
4 Adult, Cry, Parents, Play
3 Birth, Children, Girl, Love
2 Daughter, Fun, Mine, Tot
1 Illegible
0 Blank
239 Total
57 Different Responses

CHURCH

33 God
30 Sunday
18 Steeple
17 Religion
9 Christ, Preacher
8 Worship
7 Priest
6 Go, Minister
5 Holy, Synagogue
4 Catholic, Reverence
3 Episcopal, School
2 Attend, Baptist, Bell, Bells,
Building, Chapel, Glass, Good,
Group, Peace, People, Pew,
Prayer, Presbyterian, Service, White
0 Illegible
0 Blank
240 Total
73 Different Responses

CITIZEN

22 Man
20 Country, Person
18 Good
17 U.S.

CHILD

23 Mother
18 Baby
8 Parent
5 Small, Young
4 Little
3 Father, Infant, Play
2 Adult, Girl, Man,
Sister, Toy
0 Illegible
0 Blank
110 Total
42 Different Responses

CHURCH

17 God
12 Sunday
9 Worship
8 Steeple
5 School
4 Quiet
3 Pew, Pray, Religion
2 Baptist, Choir, Cross,
Goer, Priest, Reverence,
Small, Worker
0 Illegible
0 Blank
110 Total
47 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

CITIZEN (cont.)

13 American
 9 America
 6 Patriot, State, United States
 5 Honor, People
 3 Bank, Government, Member,
 Responsible, Voter
 2 Band, Council, Democracy, Duty,
 Friend, Hearst, Kane, Mayor,
 Politics, President, Resident,
 Town, U.S.A., Vote, White
 1 Illegible
 0 Blank
 239 Total
 78 Different Responses

CITY

56 Town
 21 State
 17 Country
 12 Nashville
 10 People
 8 Atlanta
 6 Street
 5 Memphis
 4 Buildings, Dump, Large, Streets
 3 Chicago, Council, Crowds,
 Government, Home, Metropolis, Smog
 2 Big, Busy, County, Crowd, Dirty,
 Metro, Nation, New York, Police
 2 Illegible
 1 Blank
 239 Total
 74 Different Responses

CLAW

23 Scratch
 20 Crab
 16 Hand
 12 Sharp
 11 Hammer, Lobster
 9 Bird, Eagle, Paw

CITIZEN (cont.)

14 American
 11 Country, Man
 9 Vote
 8 Person
 6 Good, U.S.
 5 America
 4 Government
 2 Law, People, U.S.A.
 1 Illegible
 0 Blank
 110 Total
 41 Different Responses

CITY

32 Town
 8 Nashville, State
 6 Country, Large
 4 Bustle, Street
 3 Buildings
 2 Busy, County, Noise,
 Noisy, People, St. Louis,
 Traffic, Village
 0 Illegible
 0 Blank
 110 Total
 39 Different Responses

CLAW

13 Scratch
 10 Crab
 8 Cat, Sharp
 7 Bird, Talon
 5 Paw
 4 Foot, Hurt, Nail

TABLE C-1 Continued

Males (N=240)	Females (N=110)
CLAW (cont.)	CLAW (cont.)
7 Nail, Talon	3 Fang, Lobster
6 Foot, Hook, Lion	2 Bear, Fish, Nails, Rip, Tooth
5 Cut, Tiger	0 Illegible
4 Animal, Cat, Grab, Tear	0 Blank
3 Hoof, Hurt, Nails, Tooth	110 Total
2 Blood, Dog, Fang, Fear, Fight, Finger, Grasp, Hack, Injury, Monster, Spider	41 Different Responses
2 Illegible	
0 Blank	
239 Total	
60 Different Responses	
CLAY	CLAY
38 Mold	21 Mold
30 Dirt	12 Red
21 Mud	10 Mud
16 Red	7 Dirt, Pottery
10 Cassius	6 Model
8 Pottery	4 Soil
7 Soil	3 Pot, Sand
6 Pigeon, Soft	2 Bowl, Gray, Modeling, Wet
5 Henry, Modeling, Sculpture	1 Illegible
4 Hard, Statue	0 Blank
3 Brick, Ground, Model, Putty	110 Total
2 Alabama, Build, Earth, Gray, Make, Messy, Pot, Vase	41 Different Responses
1 Illegible	
0 Blank	
239 Total	
71 Different Responses	
CLOCK	CLOCK
146 Time	65 Time
16 Tick	10 Alarm, Tick
14 Watch	4 Hands
8 Radio	3 Radio
7 Hands	2 Hand, Watch
6 Alarm	0 Illegible
5 Wall	0 Blank
4 Hand	110 Total
	21 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

CLOCK (cont.)

3 Face, Wind
2 Dial, Strike, Twelve
2 Illegible
2 Blank
239 Total
30 Different Responses

CLOSET

127 Clothes
33 Door
7 Close, Storage
6 Hanger, Space
5 Cloths, Dark, Room
4 Coat
3 Broom, Hangers, Shelf
2 Cloth, Drawer, Full
0 Illegible
0 Blank
239 Total
35 Different Responses

CLOTHING

42 Shirt
28 Wear
18 Hat
16 Warm
14 Coat
11 Pants
7 Store
6 Suit
5 Dress, Money, Shirts
4 Shoe
3 Apparel, Clothes, Hot, Nice,
Shoes, Tie
2 Body, Closet, Clover, Girl,
Good, Material, Neat, New,
Red, Stores, Warmth
0 Illegible
0 Blank
240 Total
68 Different Responses

CLOCK (cont.)

CLOSET

64 Clothes
14 Door
5 Space
2 Broom, Close, Dark, Hangers.
0 Illegible
0 Blank
110 Total
26 Different Responses

CLOTHING

34 Dress
12 Wear
11 Warm
7 Coat
5 Dresses
4 Closet, Skirt
3 Neat
2 Hat, New, Sweater
0 Illegible
0 Blank
110 Total
35 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

COAT

59 Hat
 31 Tie
 28 Warm
 13 Hanger, Wear
 8 Pants
 6 Button, Winter
 5 Cold
 4 Fur
 3 Arms, Heavy, Jacket, Man,
 Shirt, Suit, Wool
 2 Clothes, Girl, Glove, Gray,
 Mink, Rain, Sweater, Warmth
 0 Illegible
 0 Blank
 240 Total
 55 Different Responses

COFFEE

45 Tea
 22 Black
 20 Drink
 17 Cream
 15 Cup
 11 Hot, Sugar
 9 Pot
 7 Morning
 6 Break, Good
 4 Breakfast, Brown, House
 3 Grounds, Milk, Smell
 2 Awake, Bean, Doughnut,
 Instant, Nut, Shop, Sleepy,
 Strong, Taste
 1 Illegible
 0 Blank
 240 Total
 57 Different Responses

COAT

23 Hat
 22 Warm
 9 Cold
 8 Tie
 5 Dress, Fur, Hanger
 3 Hangar, Rain, Winter
 2 Collar, Man, Sweater
 0 Illegible
 0 Blank
 110 Total
 31 Different Responses

COFFEE

19 Cup
 18 Tea
 16 Black
 12 Pot
 6 Cream
 5 Drink, Hot
 2 Awake, Bad, Morning, Sugar
 0 Illegible
 0 Blank
 110 Total
 32 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

CORN

53 Cob
23 Food
21 Yellow
15 Flakes
14 Eat, Field
9 Husk
7 Farm, Stalk
4 Liquor
3 Crop, Fields, Grow, Plant,
2 Ball, Butter, Crib, Ear,
Foot, Good, Grain, Green,
Pop, Silk, Silks, Stalks,
Sweet, Tall
2 Illegible
0 Blank
240 Total
59 Different Responses

COURT

74 Judge
24 Tennis
23 Justice, Law
11 House
9 Room, Trial
7 Jury
6 Supreme
5 Jail
4 Yard
3 Date, Kangaroo
2 Fine, Jester, Judicial,
King, Lawyer, Queen,
Ticket, Trouble
0 Illegible
0 Blank
240 Total
44 Different Responses

CORN

30 Cob
11 Yellow
10 Field
7 Stalk
4 Flakes
3 Eat, Silk, Wheat
2 Butter, Ear, Farm,
Food, Green, Husk
0 Illegible
0 Blank
110 Total
41 Different Responses

COURT

33 Judge
12 Tennis, Trial
7 Law
3 Guilty, Justice, Lawyer,
Robe, Room, Yard
2 House, Jury, King, Queen
0 Illegible
0 Blank
110 Total
34 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

CROCODILE

72 Alligator
 23 Swamp
 16 Teeth
 12 Alligator, Water
 10 River
 9 Animal
 5 Danger, Tears
 4 Florida, Reptile
 3 Bite, Eat, Snake
 2 Africa, Amazon, Bag, Jungle,
 Mean, Nile, Shoes, Skin, Ugly
 1 Illegible
 0 Blank
 239 Total
 62 Different Responses

CROWD

111 People
 29 Mob
 10 Group, Many
 5 Hot
 4 Mass
 3 Fun, Gathering, Large
 2 Close, Confusion, Game, Gang,
 Masses, Noise, Riot, Small
 1 Illegible
 0 Blank
 239 Total
 61 Different Responses

CURRENCY

189 Money
 5 Cash, Dollar
 4 Bills, Coin
 3 Exchange, Green
 2 Change, Spend
 0 Illegible
 0 Blank
 239 Total
 31 Different Responses

CROCODILE

37 Alligator
 13 Teeth
 9 Swamp
 6 Animal
 5 Water
 4 Green
 3 Alligator, Bite, Florida,
 Tears
 2 Reptile, Smile
 0 Illegible
 0 Blank
 110 Total
 32 Different Responses

CROWD

41 People
 12 Mob
 7 Many
 6 Noise
 5 Mass
 4 Group
 3 Hot
 2 Big, Large
 0 Illegible
 0 Blank
 110 Total
 37 Different Responses

CURRENCY

89 Money
 3 Coins
 2 Change, Economics, Silver
 0 Illegible
 0 Blank
 110 Total
 17 Different Responses

TABLE C-1 Continued

Males (N=240)

DAGGER

128 Knife
 17 Kill
 15 Sword
 10 Cloak
 7 Death, Stab
 6 Blood, Macbeth
 4 Dirk, Murder
 3 Blade, Cut, Sharp
 2 Hurt, Sheath
 0 Illegible
 0 Blank
 239 Total
 37 Different Responses

DAWN

44 Morning
 41 Sun
 23 Dusk
 19 Early
 12 Light
 11 Day, Sunrise
 10 Sunset
 6 Evening
 4 Night
 3 Beautiful, Beauty, Daylight
 2 Daybreak, Dust, Pink, Red, Sky
 0 Illegible
 0 Blank
 239 Total
 57 Different Responses

DEER

41 Forest
 29 Doe
 19 Hunt
 12 Animal
 11 Fawn
 8 Gun, Shoot
 7 Antler
 6 Antlers, Buck, Fast
 5 Bambi, Hunting, Run

Females (N=110)

DAGGER

44 Knife
 10 Sword
 8 Blood, Stab
 7 Macbeth
 6 Kill
 4 Sharp
 3 Hamlet
 2 Mystery, Scabbard, Spear
 0 Illegible
 0 Blank
 110 Total
 25 Different Responses

DAWN

18 Sun
 14 Morning
 9 Early
 8 Pink
 7 Day
 5 Dusk, Light
 3 Beautiful, Pretty, Sunset
 2 Evening, Fresh, Sky
 0 Illegible
 0 Blank
 110 Total
 42 Different Responses

DEER

19 Doe
 16 Forest
 6 Fawn
 5 Hunt
 4 Antler, Antlers
 3 Antelope, Brown, Horn,
 Horns
 2 Animal, Buck, Crossing,
 Gun, Hunter, Mild, Pretty,

TABLE C-1 Continued

Males (N=240)

Females (N=110)

DEER (cont.)

4 Brown, Horns, Woods
 3 Bear, Crossing, Dear, Food,
 Horn, Moose, Rifle
 2 Forrest, Hunter, Swift
 0 Illegible
 0 Blank
 239 Total
 59 Different Responses

DEVIL

31 Hell
 29 Bad
 24 Satan
 22 Evil
 17 Red
 12 Angel
 6 Demon, God, Horns, Saint,
 Sin
 5 Mean, Satin
 3 Advocate, Black, Lucifer,
 Tempt
 2 Angle, Blue, Fire, Fork,
 Good, Hate, Tail, Temptation,
 Webster, Women
 0 Illegible
 3 Blank
 240 Total
 57 Different Responses

DIAMOND

63 Ring
 18 Hard
 12 Sparkle
 11 Gem
 10 Expensive
 9 Head, Money, Rich
 8 Carbon, Cut, Ruby
 5 Shiny
 4 Pretty, Stone, Wedding
 3 Bright, Clear, Crystal,
 Pearl, Shine

DEER (cont.)

2 Run, Shoot
 0 Illegible
 0 Blank
 110 Total
 45 Different Responses

DEVIL

23 Red
 13 Bad
 12 Angel
 11 Satan
 9 Evil
 6 Hell
 5 Horns
 3 God, Sin
 2 Horn, Mear, Saint,
 Tail, Wicked
 0 Illegible
 0 Blank
 110 Total
 29 Different Responses

DIAMOND

38 Ring
 10 Sparkle
 5 Bright
 4 Engagement
 3 Beautiful, Shine
 2 Carbon, Coal, Expensive,
 Gem, Hard, Jewel, Marriage,
 Wedding
 0 Illegible
 0 Blank
 110 Total
 45 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

DIAMOND (cont.)

2 Beautiful, Girl, Glass,
Jim, Mine, Necklace, Pin,
Wear
1 Illegible
1 Blank
239 Total
52 Different Responses

DOCTOR

48 Nurse
31 Lawyer
18 Medicine, Sick
15 Help
7 Heal
6 White
5 Sickness
4 Cure, Fix, Helper, Office,
Smart
3 Father, Good, Hospital,
Illness, Pain
2 Clean, Life, Medic, Patient,
Shot
3 Illegible
0 Blank
239 Total
66 Different Responses

DOG

134 Cat
8 Pet
7 Bite, Friend
6 Bark
5 Animal
4 Friendly
2 Back, Catcher, Fur, George,
Girl, Hound, Tag, Tree
3 Illegible
5 Blank
239 Total
59 Different Responses

DIAMOND (cont.)

DOCTOR

33 Nurse
12 Sick
11 Lawyer
8 Medicine
4 Help
3 Cure, Hospital
2 Heal, Health, Shots,
Sickness
0 Illegible
0 Blank
110 Total
39 Different Responses

DOG

73 Cat
7 Pet
4 Bark
2 Black, Love, Puppy
0 Illegible
0 Blank
110 Total
26 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

DREAM

51 Sleep
 21 Nightmare
 20 Night
 16 Girl
 14 Vision
 10 Day
 8 Think
 7 Boat
 6 World
 5 Bad, Good
 4 Cloud, Nice, Pleasant
 2 Bed, Clouds, Fantasy,
 Fun, Happy, Illusion, Land,
 Love, Sweet, Unreal, Wonderful
 0 Illegible
 2 Blank
 239 Total
 65 Different Responses

DUCK

66 Water
 28 Goose
 12 Bird
 9 Geese, Pond, Quack
 7 Donald, Feathers
 4 Animal, Chicken, Feet,
 Gun, Hunt, Hunting, Shoot,
 Swim, Yellow
 3 Bill, Feather, Lake, Waddle
 2 Geese, Hunter, Wet, White
 1 Illegible
 0 Blank
 239 Total
 60 Different Responses

DUST

66 Dirt
 17 Dirty
 16 Storm
 9 Bowl
 7 Mop, Sneeze

DREAM

33 Sleep
 10 Nightmare
 9 Night
 8 Vision
 5 Day
 3 Boat, Clouds
 2 Fantasy, Nice, Pleasant,
 World
 1 Illegible
 0 Blank
 110 Total
 41 Different Responses

DUCK

22 Water
 16 Quack
 10 Goose
 6 Feathers
 5 Swim
 4 Donald, Geese
 3 Fly, Pond, White
 2 Bird, Feather, Hunting,
 Lake, Waddle, Web
 0 Illegible
 0 Blank
 110 Total
 38 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

DUST (cont.)

6 Clean, Cloth
 5 Road, Sand, Wind
 4 Air, Dry
 3 Dawn, Smoke
 2 Bad, Brown, Choke,
 Cough, Devil, Field,
 Ground, Sweep, Wipe
 2 Illegible
 2 Blank
 240 Total
 79 Different Responses

EAGLE

79 Bird
 30 Fly
 18 Bald
 12 Scout
 8 Nest
 6 Claw
 5 America, Soar
 4 Beak, High
 3 Strength, U. S.,
 2 Big, Eyes, Feather,
 Feathers, Hawk, Majestic,
 Mighty, Mountains, Rank,
 Symbol, U.S.A., Vulture
 0 Illegible
 0 Blank
 239 Total
 62 Different Responses

EGG

43 Chicken
 17 Breakfast
 12 Yolk
 11 Hen, Shell
 10 White
 9 Bacon, Bird, Fried,
 Scrambled
 8 Easter
 7 Break, Eat

DUST (cont.)

28 Dirt
 7 Clean
 6 Dirty
 4 Bowl, Cloth, Mop, Sneeze
 3 Cough, Road, Storm,
 Thick, Wipe
 2 Brown, Rag, Sweep, Wind
 0 Illegible
 1 Blank
 110 Total
 45 Different Responses

EAGLE

31 Bird
 20 Fly
 6 America
 3 Bald
 2 Beak, High, Nest,
 Scout, U S A, Wing
 0 Illegible
 0 Blank
 110 Total
 48 Different Responses

EGG

13 Chicken
 10 Breakfast
 7 Fried
 6 Bacon, Bird, Easter
 5 Eat, Yolk
 4 Hen
 3 White
 2 Beater, Break, Fry, Life,
 Nog, Scrambled, Yellow

TABLE C-1 Continued

Males (N=240)	Females (N=110)
EGG (cont.)	EGG (cont.)
6 Plant	0 Illegible
5 Toast	0 Blank
4 Lay	110 Total
3 Beater, Birth, Chick, Food, Ham, Nest, Nog, Yoke	49 Different Responses
2 Boil, Dozen, Good, Hatch, Oval, Sperm	
0 Illegible	
0 Blank	
239 Total	
56 Different Responses	
EMBLEM	EMBLEM
20 Sign	19 Sign
19 Symbol	13 Seal
16 Badge	9 Blazer
14 Insignia	6 School, Symbol
13 Seal	4 Crest, Flag, Insignia, Motto
8 Crest, School	3 Gold, Medal
7 Star	2 Badge, Decal, Ensignia, Pin
6 Flag	0 Illegible
5 Eagle, Party, Patch	0 Blank
4 Medal	110 Total
3 Banner, Club, Ensignia, Gold, Scouts, Shield	41 Different Responses
2 Army, Blazer, Coat, Coat of Arms, Country, Decal, Frat, Marine, Mark, Motto, National, Pin, Sports, Stamp, Standard, Sticker	
0 Illegible	
3 Blank	
240 Total	
92 Different Responses	
ENEMY	ENEMY
67 Friend	30 Friend
23 Foe	10 Hate, War
19 Russia	9 Foe
14 War	5 Bad
10 Hate	4 Fear, Russia

TABLE C-1 Continued

Males (N=240)	Females (N=110)
ENEMY (cont.)	ENEMY (cont.)
9 Fight	3 Hostile
7 Bad	2 Communist, Gun, Opponent,
6 Hostile, Kill	Reds
4 Opponent, Russians	0 Illegible
3 Dislike	0 Blank
2 Against, Communist, Gun,	110 Total
Jap, Kentucky, Mean, Men,	39 Different Responses
Mine, Red, Soldier	
0 Illegible	
2 Blank	
240 Total	
68 Different Responses	
ENGINE	ENGINE
50 Car	30 Train
39 Motor	14 Car
28 Train	13 Motor
19 Fire	11 Fire
11 Gas	5 Run
10 Steam	4 Gas, Smoke
8 Machine	3 Red, Steam
6 Piston	2 Locomotive, Machine,
5 Power, Start	Move, Noise
4 Run	0 Illegible
3 Engineer, Noise, Oil	0 Blank
2 Airplane, Exhaust, Fast,	110 Total
Gasoline, Locomotive, 143,	28 Different Responses
0 Illegible	
1 Blank	
240 Total	
53 Different Responses	
ENVELOPE	ENVELOPE
166 Letter	69 Letter
15 Stamp	9 Stamp
10 Mail	7 Lick
9 Lick	4 Letters
5 Paper, Write	3 Mail, White, Write
4 Glue	2 Paper, Seal
3 Seal, White	0 Illegible
2 Stick, Sticky	0 Blank
	110 Total
	17 Different Responses

TABLE C-1 Continued

Males (N=240)	Females (N=110)
ENVELOPE (cont.)	ENVELOPE (cont.)
1 Illegible	
0 Blank	
239 Total	
25 Different Responses	
FARM	FARM
36 Cow	21 Cow
31 Animals	17 Animals
26 Animal	16 Animal
15 Tractor	7 House
11 House	6 Country, Horse, Pig
10 Farmer	5 Cows
9 Cows	3 Dog
6 Chicken, Country, Horse, Land	2 Barn, Boy, Duck, Green
5 Hand	0 Illegible
4 Boy	0 Blank
3 Barn, City, Crops, Pig	110 Total
2 Cattle, Duck, Fence, Food, Grass, Grow, Work	28 Different Responses
1 Illegible	
1 Blank	
239 Total	
64 Different Responses	
FIELD	FIELD
30 Grass	12 Football, Grass
17 Stream	9 Corn
16 Football	6 Flowers, Meadow, Stream
13 Corn	5 Plow
10 Meadow, Wheat	4 Cotton, Green
9 Open	3 Farm, Play, Trip
7 Forest	2 Daisies, Free, Wheat
6 Farm, Play, Plow	1 Illegible
5 Cotton, House, Mouse, Pasture, Trip	0 Blank
4 Green	110 Total
3 Ball, Baseball, Crop, Glasses, Grain, Hand, Tobacco	45 Different Responses
2 Goal, Grassy, Grow, Hay, Land, Large, Marshall, Run, Sport, Tomato	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
FIELD (cont.)	FIELD (cont.)
0 Illegible	
1 Blank	
239 Total	
72 Different Responses	
FIG	FIG
75 Tree	34 Tree
44 Newton	18 Newton
22 Fruit	16 Fruit
14 Eat	6 Eat, Leaf
13 Leaf	5 Date
11 Date	4 Cookie
7 Bar	2 Adam, Good
4 Cookie, Food, Olive	0 Illegible
3 Preserves, Prune	0 Blank
2 Adam, Fat, Grape, Nuts, Plum	110 Total
0 Illegible	26 Different Responses
2 Blank	
240 Total	
41 Different Responses	
FINGER	FINGER
51 Hand	24 Nail
30 Nail	20 Hand
25 Ring	12 Ring
18 Bowl	11 Point
17 Point	10 Thumb
13 Paint	4 Bowl, Paint, Print
12 Print, Thumb	3 Piano
5 Long	2 Cut, Nails, Prints
4 Cut	0 Illegible
3 Five, Toe	0 Blank
2 Bird, Move, Nails, Stick, Touch	110 Total
1 Illegible	24 Different Responses
1 Blank	
239 Total	
51 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
FISH	FISH
20 Water	10 Swim
19 Sea	9 Water
18 Swim	8 Bones
16 Fry	7 Fry
15 Catch, Eat	6 Eat, Food, Scales, Sea
11 Bones	4 Bones, Catch, Friday, Smell, Trout
10 Food, Hook	2 Ocean, Pole, Stink
7 Bone	0 Illegible
6 Lake	0 Blank
4 Bass, Clean, Friday, Ocean, Scale	110 Total
3 Boat, Cat, Smell, Trout	42 Different Responses
2 Cod, Fried, Good, Scales, Shark, Sport, Tail, Whale	
1 Illegible	
0 Blank	
239 Total	
71 Different Responses	
FOOL	FOOL
64 Idiot	27 Idiot
31 Stupid	13 Stupid
12 Moron	10 Dumb
11 Nut	6 Jester, Trick
9 Dumb	5 Silly
8 Crazy	3 Moron, Nut
5 April, Trick	2 Clown, Crazy, Me, Wise
4 Man, Me	0 Illegible
3 Bible, Clown, Deceive, Genius, Play	0 Blank
2 Ape, Decieve, Dope, Imbecile, Jerk, Laugh, Poor, Proof, Simple	110 Total
3 Illegible	41 Different Responses
2 Blank	
239 Total	
72 Different Responses	

TABLE C-1 Continued

Males (N=240)

Females (N=110)

FOOT

66 Shoe
 42 Toe
 21 Ball
 15 Hand
 7 Feet
 6 Smell, Toes, Walk
 5 Shoes
 4 Leg, Mouth
 3 Loose, Sock
 2 Ankle, Heel, Inch, Itch,
 Powder, Race, Toenail,
 Yard
 1 Illegible
 0 Blank
 240 Total
 56 Different Responses

FRIEND

48 Enemy
 35 Foe
 18 Good
 16 Pal
 10 Buddy
 8 Girl
 7 Boy, Companion
 5 Person
 4 Close, Nice
 3 Help, Love, Neighbor,
 People
 2 Companionship, Helpful,
 Kind, Like, Mike, Need,
 Ship, Ugly
 1 Illegible
 1 Blank
 239 Total
 70 Different Responses

FOOT

36 Shoe
 16 Toe
 9 Hand
 5 Leg, Toes
 4 Shoes
 3 Feet
 2 Ache, Ball, Note,
 Sore, Web
 0 Illegible
 0 Blank
 110 Total
 34 Different Responses

FRIEND

16 Enemy
 10 Foe
 8 Girl
 6 Close, Good
 5 Boy, Companion
 4 Best, Pal
 3 Buddy, Help, Nice
 2 Comfort, Neighbor, True
 1 Illegible
 0 Blank
 110 Total
 45 Different Responses

TABLE C-1 Continued

Males (N=240)

FROST

82 Cold
 42 Snow
 26 Jack
 22 Bite
 12 Winter
 11 Ice
 6 Robert, White
 2 Bit, Bitten, Dew,
 Freeze, Poet, Pumpkin,
 Window
 0 Illegible
 0 Blank
 239 Total
 33 Different Responses

FRUIT

58 Apple
 28 Eat
 18 Orange
 15 Juice
 14 Tree
 8 Good
 7 Food, Salad
 6 Peach, Pear
 5 Cake
 3 Banana, Cocktail, Fig,
 Grapes, Punch, Stand,
 Vegetable
 2 Cherry, Cup, Dish, Health,
 Jar, Loom, Sweet, Vegetables
 0 Illegible
 2 Blank
 240 Total
 55 Different Responses

GARBAGE

65 Can
 32 Trash
 20 Smell
 12 Collector
 10 Truck

Females (N=110)

FROST

42 Cold
 24 Snow
 16 Jack
 6 Bite
 4 Ice, White
 3 Winter
 2 Fall, Robert
 0 Illegible
 0 Blank
 110 Total
 17 Different Responses

FRUIT

27 Apple
 14 Eat
 8 Juice
 6 Salad
 5 Sweet
 4 Fresh, Good, Orange,
 Pear
 3 Bowl, Cocktail, Jar,
 Peach
 2 Cup, Food, Plate
 1 Illegible
 0 Blank
 110 Total
 31 Different Responses

GARBAGE

25 Can
 15 Trash
 12 Pail
 10 Smell
 6 Dirty

TABLE C-1 Continued

Males (N=240)

Females (N=110)

GARBAGE (cont.)

9 Dirty, Pail
 8 Disposal, Stink
 7 Waste
 6 Man, Smelly
 5 Filth
 4 Bag, Dump, Refuse
 3 Junk, Mess
 0 Illegible
 1 Blank
 239 Total
 42 Different Responses

GENIUS

99 Smart
 26 Brain
 14 Einstein
 7 Idiot
 6 Dumb, I.Q., Me
 5 IQ
 4 Bright, Intelligence,
 Intelligent
 3 Brilliant, Intellectual, Man
 2 Dunce, Everyone, Glasses,
 Mathematics, Stupid, Think
 0 Illegible
 0 Blank
 240 Total
 58 Different Responses

GERM

42 Disease
 26 Bacteria
 19 Sick
 17 Bad
 9 Illness
 8 Sickness
 7 Kill, Warfare
 6 Dirty, Infection, Small
 4 Cold, Infect, Virus
 3 Bacillus, Microscope, Mouth
 2 Biology, Bug, Cell, Death,

GARBAGE (cont.)

4 Disposal
 3 Food, Man
 2 Collector, Dirt, Refuse,
 Smelly, Truck
 0 Illegible
 0 Blank
 110 Total
 35 Different Responses

GENIUS

43 Smart
 15 Brain
 7 Einstein
 6 Brilliant
 4 Idiot
 3 Boy, I.Q., Intelligent
 2 Brains, Bright,
 Intelligence, Man
 0 Illegible
 0 Blank
 110 Total
 30 Different Responses

GERM

24 Disease
 17 Sick
 14 Bacteria
 8 Sickness
 4 Bad, Cold, Dirty
 3 Biology, Illness,
 Virus
 2 Dirt, Hospital, Ill
 0 Illegible
 0 Blank
 110 Total
 33 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

GERM (cont.)

2 Dirt, Doctor, Harmful,
Infectious, Insect, Killer,
Medicine, Ugly, Wheat
1 Illegible
0 Blank
239 Total
68 Different Responses

GIANT

60 Big
19 Man
17 Midget
14 Green, Huge
12 Large
10 Tall
8 Jack
7 Goliath, Small
4 Beanstalk, Little, Peas
3 Crab, Football, Monster
2 David, Elephant, Jolly, Killer
1 Illegible
1 Blank
240 Total
61 Different Responses

GIN

63 Drink
16 Rummy
15 Liquor, Tonic
14 Whiskey
13 Drunk
12 Bottle
9 Cotton
8 Rum, Vodka
7 Alcohol
4 Bourbon, Mill
3 Booze, Good
2 Beer, Fizz, Martini
0 Illegible
3 Blank
240 Total
55 Different Responses

GERM (cont.)

GIANT

24 Big
12 Green
9 Jack, Man
8 Huge
4 Beanstalk, Midget
3 Large
2 Dwarf, Goliath, Jolly,
Pea, Tall, Tree,
Tremendous
0 Illegible
0 Blank
110 Total
38 Different Responses

GIN

31 Drink
18 Tonic
6 Cotton, Rummy
5 Liquor
4 Rum
3 Alcohol, Bottle, Drunk
Mill, Vodka, Whiskey
2 Beer, Cards
0 Illegible
1 Blank
110 Total
31 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

GIRL

125 Boy
15 Pretty
11 Sex
10 Love
9 Friend
6 Nice
3 Dress, Fun, Good, Woman,
Wow
2 Beautiful, Beauty, Date,
Female, Fine, Scout, Sweet
0 Illegible
1 Blank
239 Total
51 Different Responses

GLOVE

135 Hand
17 Warm
11 Wear
6 Compartment
5 Finger, White
4 Cold, Fingers, Kid, Leather
3 Baseball, Boxing, Cover,
Hat, Tight, Winter
2 Fit, Mitten, Warmth
0 Illegible
0 Blank
240 Total
40 Different Response

GOD

15 Jesus
14 Heaven, Man
13 Church, Great, Religion
9 Christ
8 Lord, Supreme
7 Good, Love
6 Almighty
4 Bible, Country, Creator, Sky
3 Deity, Faith, Peace, Universe
2 Atheist, Infinite, Infinity,

GIRL

78 Boy
7 Friend
5 Pretty
3 Me
2 Female, Skirt, Woman
0 Illegible
0 Blank
110 Total
19 Different Responses

GLOVE

65 Hand
5 Kid, Leather, White
3 Tight
2 Compartment, Finger,
Fit, Soft, Warm
1 Illegible
0 Blank
110 Total
26 Different Responses

GOD

13 Love
12 Religion
9 Heaven
8 Good
6 Man
5 Almighty, Church
4 Christ
3 Faith, Infinite, Jesus,
Sky
2 Big, Country, Father,

TABLE C-1 Continued

Males (N=240)

GOD (cont.)

2 Omnipotent, One, Prayer,
White, Worship
2 Illegible
5 Blank
239 Total
89 Different Responses

GOLF

57 Ball
38 Club
19 Game
15 Play, Sport
8 Tennis
7 Course
6 Fun, Tee
5 Clubs, Palmer
3 Par
2 Arnold Palmer, Bag, Birdie,
Cart, Fore, Good, Grass,
High, Hit, Lazy, Leisure,
Score, Swing
0 Illegible
1 Blank
240 Total
54 Different Responses

GOOSE

33 Duck
26 Gander
25 Feathers
22 Feather
17 Bird
16 Geese
10 Egg
5 Chicken, Cooked, Neck, White
4 Eggs
3 Eat, Fly, Food, Hen, Liver,
Loose, Mother, Pimples
2 Animal, Birds, Dinner, Ducks,
Fat, Flesh, Foot, Fowl, Hunt,
Quill

Females (N=110)

GOD (cont.)

12 Great, Powerful,
Worship
0 Illegible
0 Blank
110 Total
42 Different Responses

GOLF

23 Ball
15 Club
10 Game
8 Tee
6 Sport
5 Play
4 Course
3 Clubs, Father, Hit
2 Cart, Fun, Player,
Tennis, Tournament,
Walk, Widow
0 Illegible
0 Blank
110 Total
33 Different Responses

GOOSE

15 Feathers
14 Egg
13 Duck, Feather
5 Gander
4 Golden
3 Eggs, Farm, Hen,
Liver, White
2 Animal, Bird, Fat,
Geese, Honk, Neck,
Quill, Yellow
0 Illegible
0 Blank
110 Total
34 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

GOOSE (cont.)

GOOSE (cont.)

1 Illegible

1 Blank

240 Total

51 Different Responses

GOVERNOR

GOVERNOR

40 State

33 State

20 Mayor

7 Leader

17 Clement

5 Mayor, President

15 Wallace

4 Head, Politics

12 President

3 Man, Mansion

7 Leader, Man, Politics

2 Faubus, Government,
Law, Official,
Politician, Ruler,
Wallace

5 Bryant, Senator

0 Illegible

4 Head, Official, Ruler

0 Blank

3 Capitol, Chief, Crook,

110 Total

Faubus, General, Mansion

46 Different Responses

2 Boss, Crooked, Election,

Executive, Important,

Politician, Rhodes, Rockefeller,

Rule, Scranton

0 Illegible

2 Blank

240 Total

82 Different Responses

GRAPE

GRAPE

49 Purple

25 Purple

22 Juice

19 Juice

21 Wine

13 Wine

20 Fruit, Vine

9 Green

14 Eat

8 Fruit

9 Seed

4 Eat, Seed

7 Green

3 Vine

6 Drink

2 Drink, Orange, Sour

5 Food, Good, Orange

0 Illegible

4 Nuts, Seeds, Sour, Sweet,
Wrath

0 Blank

3 Round

110 Total

2 Cherry, Elephant, Seedless

30 Different Responses

0 Illegible

0 Blank

239 Total

48 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

GUN

65 Bullet
 41 Shoot
 25 Rifle
 17 Shot
 11 Pistol
 9 Powder
 6 Bang
 5 Fire, Shell
 4 Bullets, Death, Smoke
 3 Man, Rack
 2 Ammunition, Barrel, Chew,
 Holster, Hunt, Knife, Quail
 0 Illegible
 1 Blank
 240 Total
 44 Different Responses

GUN

55 Shoot
 19 Rifle
 17 Bullet
 16 Powder, Shot
 11 Hunt, Pistol
 10 Fire
 9 Kill
 7 Bang, Trigger
 5 Shell
 4 Barrel, Hunting
 3 Loaded
 2 Bullets, Death, Holster,
 Knife, Rack, Smoke, War
 0 Illegible
 1 Blank
 239 Total
 52 Different Responses

HAMMER

145 Nail
 17 Hit
 8 Nails
 6 Head
 5 Throw

GUN

27 Bullet
 18 Shoot
 17 Shot
 8 Powder
 7 Rifle
 6 Bang
 2 Fire, Hunt, Pistol,
 Smoke, Trigger
 0 Illegible
 0 Blank
 110 Total
 28 Different Responses

GUN

28 Shoot
 12 Bullet
 9 Powder, Shot
 6 Kill
 5 Fire, Pistol
 3 Bang, Rifle, Smoke
 2 Barrel, Cold, Hunt,
 Rack
 1 Illegible
 0 Blank
 110 Total
 32 Different Responses

HAMMER

69 Nail
 7 Hit
 5 Nails
 4 Pound
 3 Knock

TABLE C-1 Continued

Males (N=240)	Females (N=110)
HAMMER (cont.)	HAMMER (cont.)
4 Beat, Claw, Saw	2 Bang, Head, Saw, Tools
3 Pound, Sickle, Thumb	0 Illegible
2 Anvil, Bang, Hard, Thor	0 Blank
4 Illegible	110 Total
0 Blank	23 Different Responses
240 Total	
41 Different Responses	
HAND	HAND
50 Finger	21 Finger
36 Foot	13 Foot, Ring
25 Arm	10 Glove
22 Fingers	8 Fingers
11 Shake	6 Arm, Shake
10 Glove	4 Nail
6 Ball	3 Soft
5 Ring	2 Thumb, Touch
4 Feet, Fist	0 Illegible
3 Grasp	0 Blank
2 Bag, Elbow, Eye, Girl, Heart, Hold, Saw, Watch, Wrist, Write	110 Total
0 Illegible	33 Different Responses
0 Blank	
240 Total	
65 Different Responses	
HARBOR	HARBOR
54 Boat	34 Boat
36 Bay	16 Bay
33 Ship	15 Ship
22 Water	10 Water
12 Ships	6 Lights, Ships
11 Boats	5 Boats
10 Port	3 New York, Sea
9 New York	2 Port
8 Lights	0 Illegible
6 Sea	0 Blank
4 Light, Pearl	110 Total
2 City, Dock, Hide	20 Different Responses
1 Illegible	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
HARBOR (cont.)	HARBOR (cont.)
0 Blank	
239 Total	
38 Different Responses	
HAT	HAT
80 Coat	38 Coat
45 Head	19 Head
13 Wear	8 Pin
10 Rack	5 Wear
8 Band, Rain	4 Gloves
7 Cap, Pin	3 Cap
4 Man	2 Man, Rack, Stand, Veil, Winter
3 Brim, Top	0 Illegible
2 Clothes, Derby, Hair, High, Off, Stop, Tie	0 Blank
1 Illegible	110 Total
4 Blank	34 Different Responses
239 Total	
50 Different Responses	
HATCHET	HATCHET
32 Axe	13 Chop
30 Ax	12 Ax, Axe
23 Cut	7 Knife
20 Chop	6 Kill, Tree
16 Knife	5 Cut, Sharp, Wood
15 Tree	4 Indian
14 Sharp	3 Hammer, Murder
12 Wood	2 Fire, George, Saw
11 Kill	0 Illegible
5 Blade, Bury, Hammer, Indian, Man	0 Blank
4 Blood	110 Total
3 Death, Saw	38 Different Responses
2 Dull, Face, Weapon, Woods, Work	
0 Illegible	
0 Blank	
239 Total	
45 Different Responses	

TABLE C-1 Continued

Males (N=240)

Females (N=110)

HEAD

26 Hair
 23 Shoulders
 11 Foot, Tail
 10 Body, Hat
 8 Bathroom, Eye, Eyes, Face,
 Neck
 7 Feet, Leader, Man, Shoulder
 5 Top
 4 Chief, Rear, Toe
 3 Brain, John, Nose
 2 Beer, Hand, Judge, Waiter
 1 Illegible
 0 Blank
 240 Total
 72 Different Responses

HILL

62 Mountain
 31 Climb
 22 High
 19 Top
 11 Dale, Valley
 8 Grass
 7 Steep
 6 Rise
 5 Mound
 4 Green, House, Tree
 3 Country
 2 Big, Crest, Height, Lake,
 Up
 0 Illegible
 0 Blank
 239 Total
 51 Different Responses

HONEY

83 Sweet
 77 Bee
 19 Bees
 13 Dew
 8 Comb
 4 Sugar
 3 Bear, Girl, Good
 2 Bun, Eat, Thick

HEAD

25 Hair
 8 Shoulders
 6 Face, Hat
 5 Neck
 4 Leader, Top
 3 Body, Eyes, Foot,
 President, Room,
 Shoulder, Tail
 2 Chief, Heart, Resident,
 Toe
 0 Illegible
 0 Blank
 110 Total
 41 Different Responses

HILL

33 Mountain
 17 Climb
 11 High
 6 Grass
 4 Dale
 3 Valley
 2 Green, Rolling, Slope,
 Steep, Top, Trees, Up
 0 Illegible
 0 Blank
 110 Total
 35 Different Responses

HONEY

44 Sweet
 22 Bee
 8 Bees
 4 Sugar
 3 Comb
 2 Bread, Toast

TABLE C-1 Continued

Males (N=240)	Females (N=110)
HONEY (cont.)	HONEY (cont.)
1 Illegible	0 Illegible
0 Blank	0 Blank
239 Total	110 Total
31 Different Responses	21 Different Responses
HOUR	HOUR
92 Minute	40 Time
58 Time	36 Minute
32 Clock	11 Clock
20 Glass	6 Day, Glass
12 Day	2 Hand, Second
7 Watch	0 Illegible
4 Second	0 Blank
3 Long	110 Total
2 Hand, Late	14 Different Responses
0 Illegible	
0 Blank	
239 Total	
17 Different Responses	
HUT	HUT
64 House	20 Shack
35 Shack	17 House
15 Hovel	7 Small
9 Small	6 Grass, Hovel
7 Grass, Home	5 Home, Straw
6 Live, Native	4 Thatched
5 Straw	3 Hermit, Thatch
4 Indian, Thatched	2 Little, Live, Poor
3 Cottage, Island, Poor, Primitive	0 Illegible
2 Brown, Cabin, Cave, Hermit, Jungle, Roof, Room, Thatch, Wigwam	1 Blank
0 Illegible	110 Total
2 Blank	40 Different Responses
240 Total	
70 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
<p>INK</p> <p>160 Pen</p> <p>19 Black</p> <p>12 Bottle</p> <p>10 Well</p> <p>6 Blue</p> <p>4 Blot, Pin, Write</p> <p>2 Blotter, Dark, Ink, Paper, Spill, Spot, Stain</p> <p>0 Illegible</p> <p>0 Blank</p> <p>240 Total</p> <p>22 Different Response</p> <p>INSECT</p> <p>47 Bug</p> <p>40 Bite</p> <p>30 Fly</p> <p>16 Bee</p> <p>8 Ant, Small</p> <p>7 Repellent</p> <p>6 Mosquito, Pest, Sting</p> <p>5 Repellant, Spray</p> <p>3 Swat, Wings</p> <p>2 Bird, Bugg, Crawling, Legs, Little, Moth, Spider</p> <p>1 Illegible</p> <p>1 Blank</p> <p>239 Total</p> <p>54 Different Responses</p> <p>INVALID</p> <p>48 Sick</p> <p>29 Cripple</p> <p>16 Old</p> <p>14 Helpless</p> <p>13 Wheelchair</p> <p>8 Crippled</p> <p>7 Hurt</p> <p>6 Wheel Chair</p> <p>5 Bed</p> <p>4 Child, Sorrow</p>	<p>INK</p> <p>73 Pen</p> <p>13 Black</p> <p>4 Blue, Bottle</p> <p>3 Blot, Well</p> <p>2 Messy, Spot</p> <p>0 Illegible</p> <p>0 Blank</p> <p>110 Total</p> <p>14 Different Responses</p> <p>INSECT</p> <p>32 Bug</p> <p>13 Bite</p> <p>11 Fly</p> <p>6 Buzz, Mosquito</p> <p>5 Sting</p> <p>4 Bee</p> <p>3 Ant, Crawl, Spider</p> <p>2 Bit, Little, Pest</p> <p>0 Illegible</p> <p>0 Blank</p> <p>110 Total</p> <p>31 Different Responses</p> <p>INVALID</p> <p>41 Sick</p> <p>6 Cripple, Helpless</p> <p>5 Bed, Wheel Chair</p> <p>4 Hospital, Ill, Wheel-chair</p> <p>3 Old</p> <p>2 Crippled, Help, Hurt</p> <p>0 Illegible</p> <p>0 Blank</p> <p>110 Total</p> <p>38 Different Responses</p>

TABLE C-1 Continued

Males (N=240)	Females (N=110)
INVALID (cont.)	INVALID (cont.)
3 Bedridden, Disabled, Hospital, Lamé, Person, Weak	
2 Athlete, Baby, Bad, Chair, Crutches, False, Grandmother, Pity, Poor, Shut-in, Sickness, Unfortunate, Valid	
1 Illegible	
0 Blank	
239 Total	
70 Different Responses	
JAIL	JAIL
40 Bars	29 Bars
24 House	14 Prison
22 Prison	8 Bird, Crime
18 Bird	6 Cell, House
13 Prisoner	5 Prisoner
11 Cell	4 Criminal
9 Police	3 Bar
8 Bad	2 Bad, Key, Punish
6 Break	0 Illegible
5 Criminal	0 Blank
4 Bar, Convict, Crime	110 Total
3 Bail, Bait, Law, Sentence	33 Different Responses
2 Crook, Drunk, Key, Punish	
1 Illegible	
3 Blank	
240 Total	
69 Different Responses	
JEWEL	JEWEL
72 Diamond	28 Diamond
48 Ring	14 Ring
14 Ruby	10 Ruby
11 Money	8 Gem
10 Gem	5 Shine
8 Thief	4 Emerald
6 Value	3 Green, Sparkle
4 Sparkle, Stone, Watch	2 Bright, Necklace, Stone
3 Crown, Emerald, Girl, Glitter, Necklace, Precious, Pretty	0 Illegible
	0 Blank

TABLE C-1 Continued

Males (N=240)

Females (N=110)

JEWEL (cont.)

2 Beauty, Brilliant,
Expensive, Jewelry, Opal,
Pearl, Valuable
1 Illegible
0 Blank
240 Total
47 Different Responses

JUSTICE

42 Court, Law
33 Peace
18 Judge
14 Fair
8 Right
6 Department
5 Liberty
4 Good
3 Freedom, Honor, Injustice,
Supreme Court, Truth, Warren
2 Desirable, Equality, Hall,
Jury, Mercy, of the Peace,
Police
1 Illegible
0 Blank
240 Total
57 Different Responses

KID

61 Goat
44 Child
31 Boy
18 Brother
8 Billy
6 Gloves
4 Baby, Glove
3 Brat, Dog, Joke, Lamb,
Little, Small
2 Children, Girl, Man, Son
Trouble, White, Young
0 Illegible
1 Blank
240 Total
52 Different Responses

JEWEL (cont.)

110 Total
40 Different Responses

JUSTICE

25 Peace
16 Court
10 Law
8 Right
6 Judge
5 Fair, Liberty
3 Freedom, Truth
2 Black, Department,
Good, Honor, Mercy,
Scales
0 Illegible
0 Blank
110 Total
32 Different Responses

KID

29 Goat
19 Child
13 Gloves
12 Brother
8 Glove
5 Boy
3 Baby, Billy
2 Cowboy, White
0 Illegible
0 Blank
110 Total
24 Different Responses

TABLE C-1 Continued

Males (N=240)	Females (N=110)
KING	KING
163 Queen	86 Queen
10 Kong	4 Crown
8 Crown	3 Ruler
5 Royal	2 Lear, Siam
4 Prince	0 Illegible
3 Pin	0 Blank
2 Country, Henry, Lear, Monarch, Rex, Rule, Ruler, Tyrant	110 Total
0 Illegible	18 Different Responses
1 Blank	
239 Total	
44 Different Responses	
KITCHEN	KITCHEN
78 Food	29 Food
27 Sink	19 Cook
24 Cook	17 Sink
21 Stove	5 Cooking, Stove
9 Knife	4 Clean
7 Eat	3 Eat, Yellow
6 Table	2 Maid, Pans, Utensil, Work
4 Floor, Utensil	0 Illegible
3 Door, House, Mother	0 Blank
2 Bathroom, Cabinet, Cabnet, Clean, Dinner, Dishes, Living room, Utensils	110 Total
1 Illegible	29 Different Responses
0 Blank	
239 Total	
53 Different Responses	
KNIFE	KNIFE
59 Cut	28 Cut
45 Blade	26 Ford
38 Sharp	12 Blade
23 Fork	10 Sharp
9 Gun	7 Spoon
7 Bowie	3 Blood, Kill
3 Fight, Kill, Pen, Switchblade	2 Gun, Mack
2 Ax, Blood, Death, Dull, Edge,	0 Illegible

TABLE C-1 Continued

Males (N=240)	Females (N=110)
KNIFE (cont.)	KNIFE (cont.)
2 Shiv, Spoon, Stab	0 Blank
0 Illegible	110 Total
0 Blank	26 Different Responses
240 Total	
49 Different Responses	
LABEL	LABEL
25 Name	25 Tag
21 Can	18 Name
17 Tag	11 Dress
11 Bottle	6 Clothes
9 Black	4 Jar
8 Clothes, Read	2 Bottle, Nametag,
7 Jar, Shirt	Sew, Sign, Suit,
5 Mark, Sign	White
4 Coat, Identity, Lapel,	1 Illegible
Write	0 Blank
3 Brand, Contents, Food,	110 Total
Maker, Paper, Thread	44 Different Responses
2 Beer, Glue, Package,	
Stick, Sticker, Store,	
Type, Whiskey	
5 Illegible	
3 Blank	
239 Total	
87 Different Responses	
LAKE	LAKE
74 Water	23 Water
18 River	14 Boat
17 Boat, Fish	11 Blue
11 Blue	10 Swim
10 Pond, Swim	7 River
8 Stream	6 Ski
5 Shore	4 Fish
4 Ski, Skiing	3 Pond
3 Erie, Fishing	2 Big, Clear, Home,
2 Calm, Dam, Erie, Large,	Michigan, Sail, Skiing
Old Hickory, Placid, Sea	0 Illegible
1 Illegible	0 Blank
0 Blank	110 Total
240 Total	34 Different Responses
61 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
LAMP	LAMP
120 Light	67 Light
70 Shade	18 Shade
10 Post	6 Post
6 Bulb	5 Table
5 Table	2 Aladdin, Desk
3 Desk	0 Illegible
2 Blub, Cord, Lighter, Oil, Room	0 Blank
0 Illegible	110 Total
1 Blank	16 Different Responses
239 Total	
25 Different Responses	
LEAF	LEAF
169 Tree	59 Tree
18 Green	14 Green
11 Fall	11 Fall
5 Rake	2 Autumn, Gold, Oak, Spring, Stem
2 Autumn, Brown, Grass, Loaf, Maple, Twig, Vein, Veins, Yellow	0 Illegible
0 Illegible	0 Blank
0 Blank	110 Total
239 Total	24 Different Responses
31 Different Responses	
LETTUCE	LETTUCE
40 Green	25 Salad
29 Tomato	22 Green
27 Salad	13 Tomato
25 Cabbage	5 Cabbage, Crisp, Tomatoe
13 Eat	4 Leaf
11 Food, Head, Tomatoe	3 Rabbit, Sandwich
8 Rabbit	2 Cool, Food, Good, Head
7 Crisp, Vegetable	0 Illegible
4 Money, Sandwich, Tomatoes	0 Blank
3 Garden	110 Total
2 Celery, Leaf, Salade, Salid, Tomatto	30 Different Responses
1 Illegible	
0 Blank	
240 Total	
45 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
LIBRARY	LIBRARY
115 Books	49 Books
99 Book	35 Book
8 Study	9 Study
3 Quiet, Read	7 Quiet
0 Illegible	2 Reading
0 Blank	0 Illegible
240 Total	0 Blank
17 Different Responses	110 Total
	13 Different Responses
LION	LION
62 Tiger	22 Roar
16 Roar	21 Tiger
15 Cat	7 Mane
13 King	5 Beast, Jungle
12 Mane	3 Animal, Cat, Cub,
10 Animal	Tail
8 Brave	2 Courage, Coward,
6 Jungle	Fierce, Growl, Mean,
5 Tail, Tamer	Shaggy, Yellow
3 Africa, Beast, Cage,	0 Illegible
Courage, Fierce, Hair,	0 Blank
Hunt, Leopard, Zoo	110 Total
2 Big, Car, Cub, Danger,	40 Different Responses
Den, Ferocious, Growl,	
Heart, Lamb, Main, Mean,	
Sea	
1 Illegible	
2 Blank	
240 Total	
65 Different Responses	
LIP	LIP
74 Kiss	25 Kiss
47 Mouth	18 Stick
13 Stick	17 Mouth
11 Talk	16 Lipstick
7 Girl, Lipstick, Teeth	8 Red
6 Nose, Tongue	4 Face
5 Red, Service	3 Cheek
3 Big, Read	2 Service, Teeth, Tongue

TABLE C-1 Continued

Males (N=240)

Females (N=110)

LIP (cont.)

2 Button, Chapped, Cut, Leo,
Louisville, Sass, Smart Aleck
0 Illegible
0 Blank
239 Total
51 Different Responses

LIZARD

50 Snake
39 Reptile
17 Green
11 Crawl, Slimy
10 Animal
7 Tail
4 Fast, Iguana, Scaly
3 Salamander, Skin, Slick
2 Alligator, Bag, Chamelion,
Desert, Frog, Gila Monster,
Insect, Quick, Rock, Scales,
Slimey, Tongue, Ugh, Ugly
0 Illegible
2 Blank
240 Total
71 Different Responses

LOAFER

68 Lazy
67 Shoe
11 Bum
5 Sleep, Weejun
4 Me, Worker
3 Fool
2 Couch, Louse, Man, No good,
Person, Shoes, Stupid, Tired
1 Illegible
0 Blank
239 Total
71 Different Responses

LIP (cont.)

0 Illegible
0 Blank
110 Total
24 Different Responses

LIZARD

14 Snake
12 Green
6 Crawl, Shoes,
Slimy.
5 Reptile
4 Bag, Snail
3 Alligator, Animal
2 Frog, Long, Newt,
Purse, Shoe, Skin,
Skink, Small, Ugly
0 Illegible
0 Blank
110 Total
48 Different Responses

LOAFER

55 Shoe
20 Lazy
3 Bum, Shoes, Sock
2 Penny, Wear, Weejuns
0 Illegible
0 Blank
110 Total
28 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

LOBSTER

41 Red
 40 Fish
 31 Crab
 21 Food
 17 Tail
 14 Claw
 10 Maine
 9 Sea
 8 Eat, Good
 5 Ocean
 3 Claws, Shell
 2 Boiled, Butter, Pink,
 Seafood
 0 Illegible
 1 Blank
 240 Total
 38 Different Responses

LUNATIC

73 Crazy
 33 Nut
 21 Insane
 14 Maniac
 10 Idiot
 8 Mad, Moon
 7 Madman
 6 Asylum
 3 Fanatic, People, Sick,
 2 Man, Me, Sanitorium, Stupid, Bad
 0 Illegible
 1 Blank
 240 Total
 57 Different Responses

MAID

27 Butler
 21 Servant
 20 Clean
 13 Negro, Service, Work
 10 Girl
 8 Old

LOBSTER

29 Red
 16 Fish
 11 Crab
 6 Eat, Tail
 5 Maine
 4 Good
 3 Delicious, Food
 2 Awful, Water
 0 Illegible
 0 Blank
 110 Total
 34 Different Responses

LUNATIC

34 Crazy
 16 Insane
 13 Nut
 12 Asylum
 7 Mad
 4 Idiot, Maniac
 2 Moon, Nuts
 1 Illegible
 0 Blank
 110 Total
 24 Different Responses

MAID

15 Butler
 9 Clean, Servant, Work
 5 Help
 4 Girl, House
 3 Ironing, Man
 2 Apron, Black, Colored,
 Service, Waiter, Waitress,

TABLE C-1 Continued

Males (N=240)

Females (N=110)

MAID (cont.)

7 Cleaning, Woman
6 Colored
5 Help
4 Helper, Virgin
3 Apron, Honor, House, Maiden,
Milk, Rich, Room
2 Cleaner, Home, Man, Master, Nurse,
Uniform, Wealthy, Wedding
0 Illegible
0 Blank
239 Total
73 Different Responses

MAN

138 Woman
18 Boy
5 Strong
4 Person, Women
3 Animal, Big, Human, Man
2 Ape, Dog, Hat, History, Hole,
Life, Male, Me, Old, Time
1 Illegible
2 Blank
240 Total
55 Different Responses

MEADOW

50 Field
37 Grass
31 Green
24 Lark
10 Brook
9 Flowers
4 Grassy
3 Cows, Land, Pasture, Valley
2 Calm, Cool, Daisies, Fair, Flat,
Glen, Gold, Golden, Lake, Wheat,
Yellow
0 Illegible
4 Blank
240 Total
59 Different Responses

MAID (cont.)

2 Wash, Woman
0 Illegible
0 Blank
110 Total
50 Different Responses

MAN

66 Woman
6 Boy
4 Strong, Tall
3 Big
2 Father, Masculine, Work
0 Illegible
0 Blank
110 Total
29 Different Responses

MEADOW

22 Green
20 Grass
10 Lark
9 Field
7 Flowers
3 Flower, Stream
2 Brook, Lea, Peaceful,
Pretty
0 Illegible
2 Blank
110 Total
37 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

MICROBE

66 Small
43 Germ
20 Biology
17 Microscope
12 Science
10 Bacteria
8 Hunter
6 Tiny
5 Bug
4 Disease, Little
3 Atom, Cell, Nothing
2 Chemistry, Molecule, Virus
0 Illegible
0 Blank
240 Total
47 Different Responses

MIDGET

63 Small
56 Giant
27 Man
24 Short
8 Circus
7 Little
6 Dwarf, Racer
4 Car
2 Big, Boy, Gnome, Tall, Wrestler
0 Illegible
0 Blank
239 Total
44 Different Responses

MILK

56 Cow
38 White
35 Drink
12 Bottle
11 Good
10 Butter
8 Glass
7 Cream
5 Honey, Water
3 Calcium, Cheese, Food, Sour

MICROBE

23 Small
14 Biology, Germ
9 Science
8 Microscope
5 Little, Tiny
4 Chemistry, Disease,
Microscopic
3 Minute
2 Bacteria
0 Illegible
0 Blank
110 Total
27 Different Responses

MIDGET

31 Giant
21 Small
13 Short
9 Dwarf, Little
4 Circus, Man
2 Fair, Girl, Pygmy
0 Illegible
0 Blank
110 Total
23 Different Responses

MILK

19 Drink, White
10 Cow
9 Bottle
6 Glass
5 Skim
4 Honey
3 Water
2 Baby, Cold, Cookies,
Healthy, Pasteur, Tea

TABLE C-1 Continued

Males (N=240)	Females (N=110)
MILK (cont.)	MILK (cont.)
2 Health, Sweet	0 Illegible
2 Illegible	0 Blank
0 Blank	110 Total
240 Total	37 Different Responses
51 Different Responses	
MINISTER	MINISTER
67 Preacher	27 Church
43 Church	15 Preach
22 Preach	10 Preacher
13 God	6 God, Pastor
11 Priest	5 Priest
7 Religion	3 Black, Congregation, Help,
5 Rabbi	Man, Religion, Sermon
4 Friend, Good, Pastor, Sermon	2 Friend
3 Collar, Religious	0 Illegible
2 Faith, Father, Helper, Pray, Robes	0 Blank
1 Illegible	110 Total
0 Blank	34 Different Responses
239 Total	
56 Different Responses	
MINNOW	MINNOW
142 Fish	65 Fish
23 Bait	7 Fishing, Small
14 Small	3 Bait, Little, Stream
13 Fishing	2 Bucket, Lake, Swim
5 Trout	0 Illegible
4 Pond, Stream	0 Blank
3 Bucket, Swim	110 Total
2 Bass	25 Different Responses
1 Illegible	
1 Blank	
240 Total	
35 Different Responses	
MINUTE	MINUTE
79 Second	29 Second
49 Hour	26 Time
40 Time	23 Hour

TABLE C-1 Continued

Males (N=240)	Females (N=110)
MINUTE (cont.)	MINUTE (cont.)
22 Small	8 Clock
8 Man	4 Hand
6 Short	3 Short
4 Clock	2 Small, Steak, Watch
3 Fast, Hand, Seconds	0 Illegible
2 Infinitesimal, Rice, Sec., Tiny, Watch	0 Blank
0 Illegible	110 Total
1 Blank	20 Different Responses
240 Total	
27 Different Responses	
MOB	MOB
59 Riot	29 Crowd
24 Crowd	20 Riot
23 Violence	8 Scene
20 People	7 Violence
13 Gang	6 People
11 Rule	5 Gang
8 Group	4 Group
6 Angry, Scene	3 Rule
4 Action, Gangster, Lynch	2 Action, Angry, City, Fight, Negro
3 Fight, Hang, Unruly	0 Illegible
2 Al Capone, Bang, Hanging, Hate, Kill, Men, Noise, Roit	0 Blank
1 Illegible	110 Total
0 Blank	31 Different Responses
240 Total	
55 Different Responses	
MONEY	MONEY
35 Bank	16 Spend
28 Spend	15 Green
22 Green	14 Bank
19 Rich	5 Buy, Rich
8 Buy	4 Wallet
7 Cash, Change, Fun	3 Change, Good
6 Good	2 Bills, Cash, Dime, Dollars, Gold
5 Banker	0 Illegible
4 Coins, Girls	0 Blank
3 Dollar, Dollars, Save, Security	110 Total
	48 Different Responses

TABLE C-1 Continued

Males (N=240)	Females (N=110)
MONEY (cont.)	MONEY (cont.)
2 Bags, Bin, Broke, Check, Clothes, Coin, Gold, More, Need, Needed, Nice, Paper, Penny, Tree 0 Illegible 2 Blank 240 Total 76 Different Responses	
MONKEY	MONKEY
40 Ape 21 Tail 18 Animal 15 Tree 12 Zoo 8 Jungle 6 Climb, Dance, Funny 5 Cage, Wrench 4 Hairy 3 Man, Organ, Trees 2 Bannana, Do, Donkey, Evolution, Fun, Hair, Hang, Paw, Rope, Scratch, Shine, Shines, Silly, Stupid, Suit, Swing, Time 1 Illegible 0 Blank 239 Total 81 Different Responses	18 Ape 16 Tail 6 Animal, Funny, Tree 5 Banana, Zoo 3 Bananas, Cage, Climb, Cute, Dance 2 Brown, Jungle, Organ grinder, Trees 1 Illegible 0 Blank 110 Total 40 Different Responses
MOON	MOON
41 Sun 20 Night 19 Cheese 8 Stars 7 Man 6 Crater, Yellow 5 Earth, Shot, Star 4 Green, High, Maid, Rocket, Romance, Shine, Space 3 Beam, Bright, Craters, Far, Full, Love, Lunar, Sky, White	24 Sun 16 Night 7 Star 6 Full, Stars 5 Man 4 Cheese 3 Romance, Sky 2 Blue, Craters, Half, Rocket, Romantic, Round, White, Yellow

TABLE C-1 Continued

Males (N=240)

Females (N=110)

MOON (cont.)

2 Astronaut, Big, Blue, Coat,
Mars, Rockets, Romantic, Satellite,
Stone
1 Illegible
4 Blank
239 Total
74 Different Responses

MOON (cont.)

0 Illegible
0 Blank
110 Total
37 Different Responses

MORNING

32 Night
30 Sun
29 Evening
18 Glory
13 Dawn, Day
10 Afternoon
9 Early
7 Dew
6 Noon, Star
5 Dove
4 Sunrise
3 Blue, Bright, Cool, Fresh, Good
2 Awake, Bed, Breakfast, Clear,
Cold, Due, Light, Sleep, Sleepy
1 Illegible
0 Blank
240 Total
51 Different Responses

MORNING

24 Sun
17 Night
8 Glory
7 Dew
6 Evening
5 Dawn, Sunrise
4 Sunshine
3 Bright, Light
2 Afternoon, Day, Early,
Nice
0 Illegible
0 Blank
110 Total
34 Different Responses

MORON

84 Idiot
49 Stupid
24 Dumb
9 Genius, Imbecile
7 Dope
5 Nut
4 Fool
3 Ape, Jerk
2 Color, Ignorant, Small, Boy
1 Illegible
2 Blank
239 Total
45 Different Responses

MORON

32 Idiot
29 Stupid
12 Dumb
4 Dunce
3 Imbecile, Nut
2 Joke, Smart
0 Illegible
0 Blank
110 Total
31 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

MOTHER

135 Father
32 Love
7 Dad
6 Home
5 Good
4 Nice, Woman
3 Daddy, Mom
2 Dear, Friend, Old, Son
2 Illegible
0 Blank
239 Total
43 Different Responses

MOUNTAIN

41 High
36 Hill
21 Climb
9 Snow, Stream
8 Big, Top
7 Goat
6 Peak
4 Dew, Everest, Home, Large,
Mole hill, Range
3 Height, Tall, Trees
2 Beautiful, Beauty, Climber,
Forest, Huge, Lake, Lion,
Man, Scenery, Sky, Valley
0 Illegible
3 Blank
240 Total
66 Different Responses

MOUSE

64 Rat
40 Cat
31 Trap
20 Mice
12 Gray
8 Hole, Mickey
7 Small
4 Grey
3 Animal, Cheese, Fur, House Little

MOTHER

48 Father
7 Daddy
6 Dad, Home, Kind, Love
3 Child
2 Nice, Woman
0 Illegible
0 Blank
110 Total
33 Different Responses

MOUNTAIN

19 Hill
18 High
8 Climb
7 Stream, Tall
6 Top
4 Climber, Peak
3 Goat
2 Beautiful, Lion, Rocky
0 Illegible
1 Blank
110 Total
39 Different Responses

MOUSE

19 Cat
18 Rat
11 Trap
7 Cheese, Gray
6 Small
4 Scream
3 Mice, Squeak
2 Animal, Dirty, Hole,
Little, Mickey, Scare,

TABLE C-1 Continued

Males (N=240)

Females (N=110)

MOUSE (cont.)

2 Pest, Run, Tail
 0 Illegible
 1 Blank
 240 Total
 41 Different Responses

NECKLACE

40 Pearl
 25 Diamond
 21 Neck
 20 Jewelry
 17 Pearls
 16 Bracelet
 13 Girl
 8 Pretty
 6 Diamonds, Jewels
 5 Beads, Wear
 4 Expensive, Jewel, Money
 3 Gold, Woman
 2 Break, Charm, Earring, Earrings,
 Valuable
 0 Illegible
 0 Blank
 240 Total
 52 Different Responses

NEEDLE

91 Thread
 37 Sew
 31 Pin
 15 Sharp
 11 Eye
 7 Point
 6 Prick, Stick
 4 Haystack, Pins, Sewing
 2 Fish
 1 Illegible
 4 Blank
 239 Total
 28 Different Responses

MOUSE (cont.)

2 Tail, Woman
 0 Illegible
 0 Blank
 110 Total
 33 Different Responses

NECKLACE

20 Pearl
 17 Bracelet
 13 Pearls
 10 Jewelry
 8 Diamond
 6 Neck, Pretty
 5 Wear
 3 Beads, Earrings
 2 Gold, Jewel, Jewels
 0 Illegible
 0 Blank
 110 Total
 26 Different Responses

NEEDLE

52 Thread
 29 Sew
 9 Pin
 7 Eye
 6 Sharp
 2 Sewing
 0 Illegible
 0 Blank
 110 Total
 11 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

NIGHT

90 Day
 34 Dark
 21 Sleep
 11 Fun
 7 Black
 5 Darkness, Life, Party, Stars
 4 Moon, Sex
 3 Late, Time
 2 Cool, Dance, Evening, Love,
 Morning, Shirt, Watch
 1 Illegible
 1 Blank
 240 Total
 47 Different Responses

OCEAN

54 Sea
 33 Water
 14 Blue
 11 Swim
 8 Salt, Spray
 7 Beach, Deep
 6 Front, Waves
 5 Fish, Wave
 4 Atlantic, Boat, Side
 3 Big, Pacific, Saltwater,
 Sand, Ship
 2 Distant, Fun, Liner, Roar,
 Sail, Shore, Surf, Surfing,
 Wide
 1 Illegible
 1 Blank
 239 Total
 57 Different Responses

OIL

22 Slick
 19 Gas
 17 Well
 16 Car
 12 Black, Paint

NIGHT

30 Day
 17 Dark
 13 Sleep
 8 Stars
 5 Moon
 4 Black
 3 Dance
 2 Darkness, Date, Out,
 Quiet
 0 Illegible
 0 Blank
 110 Total
 33 Different Responses

OCEAN

26 Sea
 12 Blue
 8 Salt
 7 Water, Waves
 5 Fish, Wave
 4 Atlantic
 3 Beach, Big, Deep, Swim
 2 Sand, Spray
 0 Illegible
 0 Blank
 110 Total
 34 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

OIL (cont.)

11 Texas
 10 Money
 9 Grease
 7 Painting
 6 Slippery
 5 Lamp
 4 Greasy, Water
 3 Can, Derrick, Drum, Field,
 Gasoline, Motor, Rich
 2 Burn, Change, Lubricant,
 Lubricate, Paints, Sticky,
 Thick, Wells, Work
 0 Illegible
 1 Blank
 240 Total
 76 Different Responses

ORANGE

41 Fruit
 29 Apple
 19 Color, Tree
 11 Red
 9 Eat, Juice
 7 Lemon
 6 Pear, Peel
 5 Florida, Yellow
 4 Orange, Peach, Sweet, Tangerine
 3 Blossom, Good, Green, Grove,
 Round
 2 Blue, Citrus, Drink, Food, Grape,
 Grapefruit, Peel, Pineapple
 0 Illegible
 0 Blank
 239 Total
 55 Different Responses

ORGAN

86 Music
 48 Piano
 23 Church
 21 Play

OIL (cont.)

12 Well
 10 Grease
 9 Car
 8 Slick
 7 Black, Gas, Paint
 3 Greasy, Salad
 2 Burn, Can, Derrick,
 Lamp, Pit, Tank
 0 Illegible
 0 Blank
 110 Total
 47 Different Responses

ORANGE

17 Fruit
 14 Apple
 8 Juice, Peel
 7 Eat
 6 Color
 5 Florida
 4 Peeling
 3 Lemon, Red, Sour
 2 Drink, Grapefruit,
 Green, Juicy, Orange,
 Peach, Round
 0 Illegible
 0 Blank
 110 Total
 36 Different Responses

ORGAN

44 Music
 20 Piano
 18 Play
 6 Grinder

TABLE C-1 Continued

Males (N=240)	Females (N=110)
ORGAN (cont.)	ORGAN (cont.)
20 Pipe	5 Pipe
11 Grinder	3 Church
3 Guitar, Keys, Player	2 Keys, Pipes
2 Pianist, Sound	0 Illegible
1 Illegible	0 Blank
0 Blank	110 Total
239 Total	18 Different Responses
27 Different Responses	
OYSTER	OYSTER
61 Shell	34 Shell
25 Pearl	8 Pearl, Sea
21 Sea	7 Eat
18 Clam	6 Slimy
12 Fish	5 Clam
11 Slimy	4 Stew
9 Eat	2 Crab, Fish, Ocean,
8 Bay	Slime, Slimey, Slippery,
6 Crab, Ocean	Soup
5 Food, Good	1 Illegible
4 Bed	0 Blank
3 Lobster, Raw, Stew	110 Total
2 Animal, Bar, Half shell,	37 Different Responses
Seafood, Shells, Shrimp, Snail,	
Soup	
0 Illegible	
3 Blank	
240 Total	
45 Different Responses	
PAINT	PAINT
74 Brush	34 Brush
24 House	12 Color
21 Color	8 Red
13 Red	5 House
9 Picture	4 Wet
8 Blue	3 Draw, Picture, Smell
6 Bucket, Wet	2 Artist, Blue, Canvas,
5 Can, White, Work	Grease, Green, Room, Wall,
4 Wall	White, Yellow
3 Boy, Cover, Green, Gun,	0 Illegible
Painter, Smell, Yellow	

TABLE C-1 Continued

Males (N=240)

Females (N=110)

PAINT (cont.)

2 Barn, Canvas, Colors, Mess,
Pigment, Pretty
0 Illegible
0 Blank
239 Total
51 Different Responses

PAN

32 Fry, Pot
26 Cook
17 Peter
14 Dish
11 Gold
7 Food
6 Water
5 Frying, Handle
4 American, Bed, Cake, Fish, Pots
3 Bowl, Bread, Fire, Fried, Pipes,
Skillet
2 Cup, Flute, God, Grease, Music,
Plate, Stove
2 Illegible
0 Blank
239 Total
58 Different Responses

PAPER

56 Pencil
40 Write
24 Pen
14 Clip
11 Weight, White
9 News
5 Book, Work
4 Mill, Read
3 Back, Dolls
2 Homework, Plate, Thin,
Wall, Wood, Writing
0 Illegible
1 Blank
240 Total
57 Different Responses

PAINT (cont.)

0 Blank
110 Total
37 Different Responses

PAN

31 Pot
15 Cook
13 Fry
10 Dish
4 Peter
3 American, Water
2 Cooking, Fried, Gold,
Handle, Pipes, Wash
0 Illegible
0 Blank
110 Total
32 Different Responses

PAPER

24 Pencil
23 Write
10 Pen
9 White
7 Clip
3 Weight
2 Book, Hanger, Ink,
Print, Read
0 Illegible
0 Blank
110 Total
35 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

PARTY

85 Fun
 25 Dance
 11 Wild
 9 Girls
 8 Night
 7 People
 6 Democratic
 5 Booze, Republican
 4 Beery, Communist
 3 Ball, Blast, Combo, Democrat,
 Group
 2 Drinking, Drinks, Drunks, Food,
 Girl, Light, Politics
 0 Illegible
 0 Blank
 240 Total
 65 Different Responses

PEACE

85 War
 25 Corps
 9 Corp
 8 Quiet
 6 Good, Prosperity, Tranquility, World
 5 Justice
 4 Love
 3 Dove
 2 Bug, Contentment, Fight, Goal, God,
 Happiness, Harmony, Heaven, Liberty,
 Life, Nice, On earth, Pipe, Security,
 Time, Treaty
 1 Illegible
 1 Blank
 239 Total
 69 Different Responses

PEAR

70 Fruit
 32 Tree
 31 Peach
 26 Apple

PARTY

59 Fun
 14 Dance
 6 Night
 4 Music
 3 Gay, House
 2 Band, People, Wild
 0 Illegible
 0 Blank
 110 Total
 24 Different Responses

PEACE

31 War
 10 Corps, Quiet
 7 Calm
 4 Tranquility, World
 3 Dove, Happiness
 2 Heaven, Hope, Treaty,
 U N, White
 1 Illegible
 0 Blank
 110 Total
 40 Different Responses

PEAR

35 Fruit
 19 Apple
 12 Peach
 11 Eat

TABLE C-1 Continued

Males (N=240)

Females (N=110)

PEAR (cont.)

21 Eat
 6 Plum
 5 Good, Shaped, Sweet
 3 Food
 2 See
 1 Illegible
 0 Blank
 239 Total
 43 Different Responses

PEARL

60 Oyster
 31 White
 16 Money
 9 Necklace
 8 Jewel
 7 Ocean, Pretty
 6 Valuable
 5 Clam, Expensive, Gem, Harbor,
 Value
 4 Shell
 3 Bailey, Beauty, Diamond, Jewelry,
 Round, Shiny
 2 Dive, Diver, Precious, Silver, Wealth
 2 Illegible
 0 Blank
 239 Total
 61 Different Responses

PEN

93 Pencil
 62 Write
 49 Ink
 7 Paper
 4 Fountain
 3 Writing
 2 Ball, Blue, Knife, Point
 1 Illegible
 0 Blank
 239 Total
 22 Different Responses

PEAR (cont.)

10 Tree
 4 Yellow
 3 Sweet
 2 Green, Ripe, Salad
 0 Illegible
 0 Blank
 110 Total
 20 Different Responses

PEARL

22 Necklace
 16 Oyster
 11 White
 7 Ring
 5 Gem, Pretty
 4 Jewel
 2 Beauty, Clam, Diamond,
 Jewels, Pure, Round, Ruby
 1 Illegible
 0 Blank
 110 Total
 39 Different Responses

PEN

41 Pencil
 28 Ink
 24 Write
 4 Fountain
 3 Paper
 2 Blue
 0 Illegible
 0 Blank
 110 Total
 14 Different Responses

TABLE C-1 Continued

Males (N=240)

PENCIL

92 Pen
 41 Write
 32 Lead
 14 Eraser, Sharpener
 10 Paper
 8 Sharp
 4 Sharpen
 2 Dull, Ink, School, Yellow
 0 Illegible
 0 Blank
 239 Total
 28 Different Responses

PEOPLE

36 Crowd
 14 Friends
 12 Many
 11 Group
 9 Men
 7 Crowds, Person, Persons, Places
 6 Faces, Mass, Masses
 5 Animals, Population
 3 City, Country, Humans, Man,
 Students, Women
 2 Citizens, Everyone, Friendly,
 Fun, Girls, House, Houses, Mob,
 Nation, Nice, People, Populace,
 Saw, Things, Us, World
 5 Illegible
 0 Blank
 239 Total
 82 Different Responses

PEPPER

159 Salt
 23 Hot
 19 Sneeze
 8 Black
 3 Eat, Shaker, Spice
 2 Food, Mill, Salk
 0 Illegible
 3 Blank

Females (N=110)

PENCIL

41 Pen
 19 Write
 15 Lead
 13 Eraser
 5 Sharpener
 3 Paper
 2 Ink, Wood
 0 Illegible
 0 Blank
 110 Total
 18 Different Responses

PEOPLE

17 Crowd
 8 Friends
 7 Persons
 6 Many
 5 Mass
 4 Nice
 3 Group, Men, Places
 2 City, Crowds, Human,
 Lots, Person, Us
 0 Illegible
 0 Blank
 110 Total
 57 Different Responses

PEPPER

74 Salt
 14 Hot
 10 Sneeze
 3 Red, Spice
 0 Illegible
 2 Blank
 110 Total
 9 Different Responses

TABLE C-1 Continued

Males (N=240)	Females (N=110)
PEPPER (cont.)	PEPPER (cont.)
240 Total	
23 Different Responses	
PHYSICIAN	PHYSICIAN
180 Doctor	61 Doctor
6 Sick	10 Sick
5 Doc, Medicine	4 Medicine, White
2 Dr., Father, Heal, Hospital,	3 Daddy, Heal, Man, Shot
Ill, Illness, Nurse, Pain	2 Dr., Help, Patient
1 Illegible	1 Illegible
1 Blank	0 Blank
240 Total	110 Total
38 Different Responses	23 Different Responses
PIT	PIT
49 Hole	21 Hole
38 Deep	17 Deep
30 Pendulum	11 Pendulum
13 Fall	7 Dark
6 Black, Dark	4 Black, Fall, Snake
5 Ditch, Fire, Viper	3 Dig
4 Barbecue, Pendulum, Snake, Stop	2 Bar B Q, Bar B Que,
3 Barbeque, Race	Cherry, Ditch
2 Cave, Dig, Football, Peach	0 Illegible
1 Illegible	0 Blank
1 Blank	110 Total
240 Total	43 Different Responses
70 Different Responses	
POT	POT
44 Pan	24 Pan
20 Black	15 Coffee
16 Kettle	14 Black
11 Cook, Flower	9 Cook, Kettle
10 Gold	8 Stew
8 Food	2 Beans, Boil, Bowl,
6 Coffee, Stew	Dirty, Food
5 Ash, Luck, Plant	0 Illegible
4 Belly, Holder, Soup	1 Blank
3 Dirty, Dish, Hot, Pie	110 Total
	31 Different Responses

TABLE C-1 Continued

Males (N=240)	Females (N=110)
POT (cont.)	POT (cont.)
2 Beans, Boil, Coal, Fire, Stove	
3 Illegible	
3 Blank	
240 Total	
77 Different Responses	
PRIEST	PRIEST
53 Church	31 Church
24 Catholic	18 Catholic
19 Minister, Religion	7 Black, Father
15 Father	6 Minister
13 Preacher	5 Nun
9 Black	3 Pray, Robe
6 God, Saint	2 Devout, Holy, Prayer,
5 Holy	Preacher, Religion
4 Man, Monk, Religious	0 Illegible
3 Good, Preach, Rabbi	0 Blank
2 Bible, Mass, Sermon	110 Total
1 Illegible	33 Different Responses
0 Blank	
240 Total	
62 Different Responses	
PRISON	PRISON
40 Bars	21 Bars
34 Cell	15 Jail
21 Jail	12 Cell
11 Walls	5 Wall
10 Wall	4 Criminal, Walls
8 Convict	3 Crime
7 Bad	2 Bad, Bar, Cage,
6 Camp	Confinement
5 Confinement, Dark, Punishment	0 Illegible
4 Crime	0 Blank
3 Bar, Confine, Guard	110 Total
2 Captive, Capture, Cells, Con,	49 Different Responses
Criminal, Enclosed, Gate, Home,	
Horrible, House, Inmate, Pen,	
Sentence, Warden	
1 Illegible	
1 Blank	
239 Total	
73 Different Responses	

TABLE C-1 Continued

Males (N=240)

Females (N=110)

RABBIT

17 Animal
 15 Hare, Hunt
 13 Fast
 12 Bunny, Fur
 9 Foot
 8 Ears
 6 Carrot, Jump, Run
 5 Fox, Gun, Multiply, White
 4 Dog, Jack
 3 Ear, Food, Hop, Hunting,
 Squirrel, Stew
 2 Cage, Deer, Easter, Hutch,
 Kill, Luck, Mouse, Peter,
 Prolific, Punch, Rabid, Shoot,
 Woods
 3 Illegible
 0 Blank
 239 Total
 81 Different Responses

RADIO

83 Music
 22 Television
 14 Listen
 13 T.V.
 11 Station
 8 Loud
 7 Noise
 5 Announcer, Hear
 4 Ham, Play, TV
 3 Program, Waves
 2 Clock, News, Old, Receiver,
 Set, Transmitter, Tube, TV.,
 Wave
 2 Illegible
 0 Blank
 239 Total
 56 Different Responses

RABBIT

10 Hop
 9 Bunny, Hare
 8 Ears
 7 Fur
 5 Run, Soft, White
 4 Animal
 3 Carrot, Dog, Foot
 2 Babies, Cat, Deer, Eat,
 Gun, Peter, Tail
 0 Illegible
 0 Blank
 110 Total
 44 Different Responses

RADIO

45 Music
 9 Noise
 8 Loud
 7 TV
 5 Listen
 4 Television
 3 Play, Station
 2 News, Set
 0 Illegible
 0 Blank
 110 Total
 32 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

RAIN

63 Wet
 28 Water
 27 Coat
 16 Snow
 8 Umbrella
 6 Thunder
 5 Fall, Sun
 4 Storm
 3 Cloud, Hat, Pour, Raincoat
 2 Clouds, Cold, Drop, Drops,
 Dry, Forest, Hard, Weather
 3 Illegible
 4 Blank
 239 Total
 63 Different Responses

RECORD

68 Player
 24 Music
 13 Play
 9 Song
 7 Phonograph
 6 Album, Listen
 5 Radio, Singer
 4 Stereo
 3 Beatles, Break, Hop, Shop, Sing
 2 Disc, Disk, Jump, Keep, Store,
 Tape, Time
 1 Illegible
 1 Blank
 240 Total
 84 Different Responses

REPTILE

137 Snake
 16 Animal
 11 Lizard
 9 Alligator
 5 Scales
 4 Cold
 3 Crocodile, Slimy, Swamp

RAIN

22 Wet
 11 Snow
 8 Coat, Water
 6 Umbrella
 5 Cloud
 4 Boots, Shine
 3 Hat, Sleet, Storm,
 Thunder
 2 Clouds, Cold, Drop
 0 Illegible
 0 Blank
 110 Total
 39 Different Responses

RECORD

40 Player
 10 Music
 8 Play
 6 Song
 4 Album
 3 Disc, Listen, Stereo
 2 Break, Disk, Write
 0 Illegible
 0 Blank
 110 Total
 38 Different Responses

REPTILE

54 Snake
 7 Alligator
 5 Lizard
 4 Animal, Crocodile
 2 Amphibian, Fish, Green,
 Jungle, Scales, Slimy,
 Swamp, Ugh

TABLE C-1 Continued

Males (N=240)	Females (N=110)
REPTILE (cntt.)	REPTILES (cont.)
2 Amphibian, Dangerous, Garden, Green, Insect, Mammal, Turtle	1 Illegible
0 Illegible	0 Blank
1 Blank	110 Total
239 Total	32 Different Responses
49 Different Responses	
RESIDENT	RESIDENT
42 House	24 House
26 Home	16 Home
23 Hall	13 Hall
16 Live	11 Live
14 Doctor	8 Dorm
12 Advisor	5 Doctor, Student
11 Dorm	4 Person
6 Inhabitant, Physician, Student	3 Dormitory
5 Occupant, Person	2 Dorms, Head, Living, Occupant
4 Adviser, Apartment, Man	0 Illegible
2 Dorm., Lives, Living, Nurse, Owner, School, Surgeon, Teacher, Town	0 Blank
1 Illegible	110 Total
2 Blank	26 Different Responses
240 Total	
59 Different Responses	
RIBBON	RIBBON
43 Blue	28 Hair
29 Red	13 Bow, Red
27 Hair	10 Blue
19 Bow	4 Pretty, Satin, Tie
15 Typewriter	3 Package, Scarlet, Typewriter
13 Tie	2 Color, Cut, Present, Silk, Velvet
8 Cut	0 Illegible
6 Package, Scarlet	0 Blank
5 Prize, Tape	110 Total
4 Present, Silk, String, Win	30 Different Responses
3 Type	
2 First, Medal, Pretty, Smooth, Spool	
0 Illegible	

TABLE C-1 Continued

Males (N=240)

Females (N=110)

RIBBON (cont.)

RIBBON (cont.)

0 Blank
240 Total
56 Different Responses

RIFLE

RIFLE

79 Gun
27 Bullet
36 Shoot
9 Fire
7 Shotgun
6 Shot
5 Hunt, Kill
4 Hunting, Man
3 Target
2 Army, Barrel, Butt,
Cartridge, Pistol,
Precision, Scope,
Shooting, Trigger
1 Illegible
0 Blank
240 Total
46 Different Responses

33 Gun
19 Shoot
12 Shot
11 Bullet
6 Fire
5 Hunt, Man
3 Kill, Long
0 Illegible
0 Blank
110 Total
22 Different Responses

RING

RING

63 Finger
23 Bell
20 Wedding
15 Marriage
14 Diamond, Gold
10 Girl
6 Circus, Class
5 Ringo
4 Married, Marry, Round, Watch
3 Hand, Key, Phone
2 Bottle, Box, Circle,
Engagement, Fire, Jewel, Sing,
Stone
1 Illegible
0 Blank
240 Total
47 Different Responses

22 Finger
13 Wedding
11 Marriage
10 Diamond
8 Bell
4 Gold
3 Hand, Pearl, Round
2 Bottle, Circus, Door,
Engaged, Married, Marry,
Stone, Toss
0 Illegible
0 Blank
110 Total
34 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

RIVER

65 Water
 23 Stream
 13 Bank
 12 Lake
 10 Creek
 9 Mississippi, Red
 7 Flow
 6 Wet
 5 Cumberland
 4 Boat, Miss., Run
 3 Bed, Blue, Bridge, Sea, Wide
 2 Big, Cross, Deep, Fish,
 Jordan, Muddy, Ocean, Ohio,
 Rio, Road
 2 Illegible
 0 Blank
 240 Total
 60 Different Responses

ROAD

25 Car, Highway, Street
 11 Dirt, Path
 9 Travel
 8 Drive, Pavement, Way
 6 Long
 5 Map, Runner, Winding
 4 Line
 3 Lane, Mud, Rough, Trail
 2 Bridge, Cars, Country, Dust,
 Freeway, Go, Gravel, Pave,
 Paved, Straight, Trip, Work
 4 Illegible
 0 Blank
 239 Total
 74 Different Responses

RIVER

27 Water
 10 Stream
 7 Lake
 5 Muddy
 3 Boat, Cool, Red, Wet,
 Wide
 2 Bank, Bed, Canoe,
 Current, Flow, Mud,
 Ohio
 0 Illegible
 0 Blank
 110 Total
 48 Different Responses

ROAD

18 Street
 14 Car
 8 Highway, Travel
 5 Dirt
 3 Drive, Path, Way,
 Winding
 2 Dust, Long, Map,
 Trail, Walk
 1 Illegible
 0 Blank
 110 Total
 48 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

ROOM

43 Door
41 Window
17 Bed
9 Small
8 Walls
7 Floor, House
5 Building, Number
4 Big, Furniture, Large, Sleep,
Space, Wall
3 Class, Live, Living, Open,
Study
2 Bath, Chair, Desk, Dorm, Mine,
Place, Residence, Stay
1 Illegible
2 Blank
240 Total
68 Different Responses

ROSE

91 Flower
53 Red
12 Smell
10 Bud, Petal, Thorn
6 Sweet
5 Tulip
4 Bush
3 Pretty
2 Beauty, Garden
1 Illegible
0 Blank
240 Total
43 Different Responses

SAINT

30 Good
24 Church, Sinner
11 Peter, Religion
10 God, Holy
8 John
7 Priest
6 Joan

ROOM

16 Window
11 Door
9 Bed
5 Home, House
4 Chair, Number
3 Bedroom, Dorm, Mine,
Wall
2 Desk, Large, Small, Walls
0 Illegible
0 Blank
110 Total
57 Different Responses

ROSE

27 Flower
21 Red
8 Smell
6 Petal, Sweet
5 Pink
3 Beauty, Bush, Pretty,
Thorn
2 Color, Fragrant, Perfume,
Tulip
0 Illegible
0 Blank
110 Total
31 Different Responses

SAINT

22 Church
13 Good
9 Sinner
6 Holy
5 God
4 Christopher
3 Angel, Francis, John

TABLE C-1 Continued

Males (N=240)

SAINT (cont.)

5 Catholic, Christopher, Francis,
Thomas
4 Angel, Mary
3 Devil, Joseph
2 Christ, Halo, James, Louis,
Nicholas, Paul, Savior
2 Illegible
0 Blank
240 Total
74 Different Responses

SALT

137 Pepper
29 Shaker
16 Sugar
11 Water
5 Food
3 Taste
2 Ocean, Seasoning, Tablet,
Tablets, White
0 Illegible
0 Blank
239 Total
39 Different Responses

SAW

51 Wood
46 Cut
23 Hammer
19 See
14 Blade
8 Teeth, Tree
7 Chain
5 Horse, Mill
4 Seen, Tooth
3 Board, Buzz, Dust, Log, Work
2 Logs, Lumber, Sawdust, Through,
Axe, Build
0 Illegible
0 Blank
239 Total
41 Different Responses

Females (N=110)

SAINT (cont.)

2 Augustine, Catholic,
Devil, Godly, Halo,
Heaven, Joan, Peter
0 Illegible
0 Blank
110 Total
43 Different Responses

SALT

75 Pepper
13 Sugar
6 Shaker
2 Bitter, Taste, White
0 Illegible
0 Blank
110 Total
16 Different Responses

SAW

25 Wood
14 See
13 Hammer
9 Cut
7 Dust
5 Seen
3 Blade, Buzz, Mill,
Teeth
2 Horse, Lumber, Nail,
Tooth
0 Illegible
0 Blank
110 Total
31 Different Responses

TABLE C-1 Continued

Males (N=240)	Females (N=110)
SCOUT	SCOUT
116 Boy	42 Boy
11 Uniform	23 Girl
7 Good, Master	4 Troop
6 Cub	3 Green, Honor, Uniform
5 Look	2 Master
4 Camping	1 Illegible
3 Eagle Search, Woods	0 Blank
2 Badges, Boys, Camp, Explore, Girl, Honor, Indian, Leader, Loyal, Oath, Spy, Troop, Troup	110 Total
1 Illegible	36 Different Responses
2 Blank	
240 Total	
69 Different Responses	
SEA	SEA
44 Ocean	14 Ocean
32 Water	12 Water
15 Fish	11 Blue
14 Ship	10 Waves
8 Gull, Waves	6 Boat
7 Salt, Shore	5 Swim
6 Wave	4 Salt, Wave
5 Boat, Coast, Swim	3 Beautiful, Fish, Foam, Green, Shore
4 Blue, Horse, Sand, Surf	2 Gull, Roar, Roll, Sail, Ship
3 Breeze, Food, Roar, Sail	0 Illegible
2 Bird, Endless, Good, Land, Sailing, Seagull	0 Blank
0 Illegible	110 Total
0 Blank	37 Different Responses
240 Total	
70 Different Responses	
SHEEP	SHEEP
51 Wool	25 Wool
20 Goat	13 Goat
18 Dog	8 Dog
16 Herd	7 Herd
14 Lamb	6 Lamb
10 Animal, Herder	5 Cow
7 Farm	4 Ewe

TABLE C-1 Continued

Males (N=240)

Females (N=110)

SHEEP (cont.)

6 Skin
 5 Cattle, Cow, Ewe, Shepard
 4 Grass, Pasture, Ram, Shepherd,
 Sleep, White
 3 Black
 2 Deer, Duck, Flock, Hearder
 0 Illegible
 1 Blank
 239 Total
 55 Different Responses

SHELL

51 Sea
 16 Fish
 15 Ocean
 14 Oil
 12 Beach, Gas
 8 Egg, Gasoline, Gun, Hard
 7 Snail
 6 Clam
 5 Seashore, Shore
 4 Oyster
 3 Cover, Crab
 2 Animal, Conch, Game, Rifle,
 Turtle
 1 Illegible
 0 Blank
 239 Total
 65 Different Responses

SHIP

77 Boat
 31 Sail
 22 Water
 18 Sea
 15 Ocean
 9 Shore
 4 Captain, Sink, Vessel
 3 Wreck
 2 Dock, Mast, Men, Navy,
 State, Steam, Travel,
 Wrecked

SHEEP (cont.)

2 Animal, Field, Fields,
 Ram, Shepherd, Skin,
 Soft, White
 0 Illegible
 0 Blank
 110 Total
 41 Different Responses

SHELL

39 Sea
 8 Beach, Fish, Ocean
 4 Crab
 3 Clam, Egg, Gas, Pink
 2 Oyster, Pretty,
 Sea shore, Snail,
 Station
 0 Illegible
 0 Blank
 110 Total
 35 Different Responses

SHIP

22 Sail
 19 Sea
 18 Boat
 7 Water
 6 Ocean
 3 Cruise, Travel
 2 Ahoy, Captain, Fools,
 Sails
 0 Illegible
 0 Blank
 110 Total
 35 Different Responses

TABLE C-1 Continued

Males (N=240)	Females (N=110)
SHIP (cont.)	SHIP (cont.)
4 Illegible	
0 Blank	
240 Total	
51 Different Responses	
SHIRT	SHIRT
47 Pants	17 Skirt
27 Wear	11 Blouse, Tie
14 Button, Tie	9 Pants
11 Tail, White	6 Button
9 Clothes	5 Buttons, Wear
6 Buttons, Sleeve	4 Collar, Trousers
5 Trousers	3 Dress, Shorts, Tail, White
4 Sweater, T	2 Blue, Boy, Clean, Iron, Sweater
3 Coat, Collar, Iron, Slacks, Sport	0 Illegible
2 Back, Blouse, Blue, Boy, Clean, Color, Colorful, Dirty, Dress, Gant, Pretty, Short, Skirt, Stripe, Tails, Waist	0 Blank
1 Illegible	110 Total
0 Blank	35 Different Responses
239 Total	
66 Different Responses	
SHOE	SHOE
47 Foot	25 Lace
36 Lace	19 Sock
23 String	12 Foot
20 Sock	7 String
19 Horn	6 Horn, Tie
14 Leather	5 Leather
12 Shine	4 Brown
7 Tie, Wear	3 Stocking
5 Boot, Feet, Tree	2 Hurt, Laces, Shine, Wear
3 Black	0 Illegible
2 Heel, Toe, Tongue, Walk, Weejun	0 Blank
0 Illegible	110 Total
0 Blank	28 Different Responses
239 Total	
44 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
SINK	SINK
32 Kitchen	19 Dishes
21 Swim	14 Kitchen, Water
20 Water	11 Wash
15 Wash	8 White
11 Basin, Ship	5 Drown
9 Dishes, Float, White	3 Dish, Swim
7 Drain, Drown	2 Basin, Dirty, Drain,
6 Hole	Drop, Fall, Hole,
5 Down	Stopper
4 Bathroom, Lavatory	0 Illegible
3 Bottom, Dirty, Drop, Faucet	0 Blank
2 Bowl, Deep, Dish, Fall, Hand,	110 Total
Mud, Pit, Quicksand, Soap,	34 Different Responses
Stink, Tub	
0 Illegible	
2 Blank	
240 Total	
64 Different Responses	
SINNER	SINNER
35 Bad	22 Bad
28 Saint	12 Saint
17 Evil, God, Hell	7 Evil
11 Man	5 Hell, Repent, Wrong
10 Church	4 Church
7 Repent	3 God, Sin
6 Wrong	2 Human, Man, Me,
5 Devil	None, Religion
4 Fun	0 Illegible
3 Forgive, Me	0 Blank
2 All, Black, Christ, Everyone,	110 Total
Forgiveness, Good, Lost,	48 Different Responses
Nogood, People, Religion,	
Thief	
4 Illegible	
3 Blank	
239 Total	
71 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
SISTER	SISTER
141 Brother	66 Brother
27 Girl	6 Friend, Girl
9 Mother	4 Fun
5 Little, Nun	3 None, Nun
2 Good, Love, Nice, None, Pain, Trouble, 3	2 Cute, Sweet, Younger
0 Illegible	0 Illegible
3 Blank	0 Blank
240 Total	110 Total
48 Different Responses	25 Different Responses
SKIRT	SKIRT
61 Blouse	61 Blouse
58 Girl	9 Dress
46 Dress	5 Shirt, Wear
7 Shirt	3 Sweater
5 Pants, Wear	2 Blue, Clothes
4 Short, Tie	0 Illegible
3 Legs	0 Blank
2 Button, Clothes, Collar, Girls, Madras, Pretty, Red, Shoe, Sweater	110 Total
0 Illegible	30 Different Responses
0 Blank	
239 Total	
46 Different Responses	
SMOKE	SMOKE
115 Fire	41 Fire
46 Cigarette	34 Cigarette
14 Cigar	8 Cigar
7 Pipe	3 Pipe
4 Cancer, Smog	2 Dirty, Drink, Smog
3 Stack	0 Illegible
2 Cigarettes, Cigarette, Drink, Eyes, Gray, Hot, Water, White,	0 Blank
0 Illegible	110 Total
0 Blank	25 Different Responses
239 Total	
45 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
SNAKE	SNAKE
50 Bite	20 Bite
23 Grass	9 Grass
16 Reptile	7 Slimy
12 Crawl	5 Reptile
8 Rattle	4 Eel, Poison, Skin
6 Animal	3 Rattler, Scared,
5 Long, Rattler	Slither,
4 Black, Evil, Skin	2 Asp, Crawl, Fear,
3 Asp, Bit, Coil, Dance, Pit,	Green, Rattle
Poisonous, Serpent, Slime,	0 Illegible
Slimy, Slither	1 Blank
2 Curl, Danger, Doctor, Green,	110 Total
Kill, Lizard, Low, Poison,	52 Different Responses
Scaly, Sneaky, Squirm, Strike,	
Ugly, Wiggle, Worm	
0 Illegible	
0 Blank	
239 Total	
78 Different Responses	
SOAP	SOAP
51 Wash	19 Water
37 Clean	18 Clean, Wash
23 Boy, Box	17 Dish
20 Water	6 Box, Suds
15 Dish	5 Bar
12 Bath, Operat	3 Bath
11 Suds	2 Pink, White
9 Bar	0 Illegible
5 Ivory	0 Blank
4 Towel, White	110 Total
3 Bubble, Bubbles, Slippery	24 Different Responses
2 Cleanser, Dirt, Opra, Slick	
0 Illegible	
2 Blank	
240 Total	
37 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
SOLDIER	SOLDIER
34 War	16 War
29 Army	15 Army
28 Gun	12 Gun
18 Fight	8 Fight, Uniform
15 Sailor	7 Man
14 Man	4 Sailor
6 Kill, Rain, Rifle	2 Boy, Die, Fighter,
5 Boy, Uniform	Fortune, Kill, March
4 Fighter, Helmet, March	0 Illegible
3 Dead, Die, Military	0 Blank
2 Battle, Death, Foot, G.I.,	110 Total
Navy, Protector, Walk, Work	41 Different Responses
1 Illegible	
0 Blank	
239 Total	
60 Different Responses	
SPIDER	SPIDER
100 Web	34 Web
30 Insect	15 Bug
20 Bug	11 Black
14 Black	5 Legs
8 Legs	4 Crawl, Insect
6 Black widow.	2 Awful, Black widow,
5 Fly	Flea, Fly, Ick, Scared,
4 Ant	Ugh, Ugly, Webb
3 Corvair, Poison, Webb	0 Illegible
2 Arachnid, Big, Bite, Unsect	0 Blank
0 Illegible	110 Total
0 Blank	34 Different Responses
240 Total	
51 Different Responses	
STAMP	STAMP
85 Letter	54 Letter
18 Postage	10 Mail
16 Collection, Mail	9 Postage
9 Lick.	8 Lick
6 Collector, Post Office, Hubber	3 Stick
5 Machine, 5 cents	2 Collection, Envelope,
4 Book, Envelope	Pad, Post card, Post
	Office, Purple

TABLE C-1 Continued

Males (N=240)	Females (N=110)
STAMP (cont.)	STAMP (cont.)
3 Collect, Stick	0 Illegible
2 Air Mail, Envelop, Foot, Glue, Hit, Money, Out, Pad, Paste, Stomp, Washington, 4 cents	0 Blank
2 Illegible	110 Total
0 Blank	25 Different Responses
240 Total	
54 Different Responses	
STARS	STARS
69 Sky	37 Sky
24 Night	13 Night
20 Moon	12 Moon
13 Heaven	5 Beautiful
11 Heavens	4 Bright, Twinkle
9 Bright	3 Heaven, Light, Love, Stripes
5 Beautiful, High, Stripes, Universe	0 Illegible
4 Above, Twinkle	2 Blank
3 Far, Light, Love, Shine	110 Total
2 Astronomy, Constellation, Faraway, Galaxy, Infinity, Planet, Space	31 Different Responses
1 Illegible	
3 Blank	
240 Total	
59 Different Responses	
STEAM	STEAM
37 Hot	23 Heat
33 Heat	17 Hot
28 Engine	15 Engine
25 Water	13 Water
15 Iron	10 Iron
13 Bath	5 Boat
8 Boat	4 Kettle, Ship
7 Vapor	2 Moist, Wet
6 Smoke	0 Illegible
4 Kettle	0 Blank
3 Room	110 Total
2 Clean, Creek, Locomotive, Pipe, Roller, Ship, Shovel, Wet	25 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

STEAM (cont.)

STEAM (cont.)

2 Illegible
5 Blank
239 Total
56 Different Responses

STEP

STEP

42 Up
33 Down
29 Walk
26 Stairs
23 Ladder
11 Fall
4 Stair
3 Climb, Door, High, Stone,
Trip
2 Hop, House, Mother, On,
Sister, Stop
2 Illegible
2 Blank
240 Total
59 Different Responses

25 Up
15 Stairs
11 Stair
10 Walk
8 Down
7 Ladder
5 Fall
3 Climb, Run
2 Feet, Foot, Forward
1 Illegible
0 Blank
110 Total
28 Different Responses

STORE

STORE

52 Buy
27 Book
16 Food
13 Shop, Window
10 Money
8 Room, Sell
6 Clothes, Grocery, Merchandise
5 Bought, House
4 Goods, Groceries
3 Front, Purchase
2 Articles, Candy, Department,
Dept., Door, Items, Keeper, Shoe
2 Illegible
0 Blank
239 Total
57 Different Responses

41 Buy
10 Shop
8 Window
6 Book
5 Clothes, Grocery, Money
3 Books, Bought
2 House
0 Illegible
0 Blank
110 Total
32 Different Responses

TABLE C-1 Continued

Males (N=240)

STOREHOUSE

46 Warehouse
 17 Grain
 16 Food
 11 Boxes, Goods
 8 Room, Supplies
 4 Ham, Storage
 3 Building, Keep, Supply, Wares
 2 Barrels, Big, Bomb, Box, Cold,
 Cotton, Furniture, Garage, Good,
 Junk, Meat, Space, Store, Things,
 Tobacco, Trunk, Trunks, Winter,
 Wood, Work
 2 Illegible
 1 Blank
 240 Total
 93 Different Responses

STORM

42 Rain
 35 Hurricane
 25 Wind
 13 Sea
 8 Lightning, Thunder
 7 Tornado, Weather
 5 Bad, Violent
 4 Clouds, Lightening
 3 Cloud, Dark, Dora, Fury,
 Gale, Ocean
 2 Boat, Center, Danger,
 Florida, Squall, Tempest,
 Turbulence, Window
 0 Illegible
 1 Blank
 240 Total
 68 Different Responses

STOVE

62 Hot
 53 Cook
 31 Pipe
 17 Heat
 11 Fire

Females (N=110)

STOREHOUSE

17 Warehouse
 8 Food
 7 Boxes
 6 Grain
 5 Furniture
 4 Keep, Store
 3 Barn, Supply, Tools,
 Wares
 2 Big, Box, Goods,
 Luggage, Storage,
 Suitcase, Trunks, Wood
 0 Illegible
 0 Blank
 110 Total
 50 Different Responses

STORM

21 Wind
 15 Thunder
 12 Rain
 8 Hurricane
 6 Tornado
 5 Cloud, Lightning
 4 Black, Dark
 2 Clouds, Dora, Gloomy,
 Lightening, Violent,
 Warning
 0 Illegible
 0 Blank
 110 Total
 33 Different Responses

STOVE

31 Cook
 21 Hot
 12 Pipe
 10 Heat
 8 Oven
 4 Warm

TABLE C-1 Continued

Males (N=240)	Females (N=110)
STOVE (cont.)	STOVE (cont.)
10 Oven	3 Fire, Food, Warmth
7 Wood	2 Smoke, Wood
6 Black, Food	0 Illegible
4 Kitchen	0 Blank
3 Iron	110 Total
2 Burn, Coal, Electric, Pot, Range, Warm	22 Different Responses
1 Illegible	
1 Blank	
239 Total	
32 Different Responses	
STREET	STREET
46 Road	19 Road
25 Light	14 Light
22 Car	7 Walk
13 Avenue	6 Avenue, Live
10 House	5 Car, Lamp
9 Corner	4 Cars
6 Number, Sign, Walk	3 Drive, House, Pavement, Sign
5 Lamp, Long	2 Cross, Sidewalk, Tar, Town, Trees
4 Alley, Fight, Home, Live, Sidewalk	0 Illegible
3 City, Dark	0 Blank
2 Address, Ave., Black, Cleaner, Dirt, Pavement, Place, Traffic	110 Total
0 Illegible	39 Different Responses
2 Blank	
240 Total	
69 Different Responses	
SUMMER	SUMMER
72 Winter	24 Winter
48 Hot	19 Hot
25 Fun	14 Fun
11 Heat	5 Vacation
9 Warm	4 Warm
8 Vacation	3 Heat, Reading, Spring, Sun
5 Reading, School	2 Lazy, Months, Short, Swimming
4 Night, Sun	
3 Spring, Weather	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
SUMMER (cont.)	SUMMER (cont.)
2 Autumn, Job, Pleasant, Swim	0 Illegible
0 Illegible	0 Blank
0 Blank	110 Total
239 Total	37 Different Responses
50 Different Responses	
SYRUP	SYRUP
55 Maple	25 Pancakes
48 Pancakes	22 Maple
23 Pancake	9 Sweet
16 Waffles	8 Pancake, Waffles
13 Sticky	7 Waffle
12 Sweet, Waffle	5 Honey, Molasses,
9 Honey	Sticky
8 Thick	3 Breakfast, Thick
5 Corn	2 Corn
4 Molasses, Sugar	0 Illegible
3 Hotcakes	0 Blank
2 Breakfast, Cane, Food,	110 Total
Pan Cakes, Pour	20 Different Responses
1 Illegible	
0 Blank	
240 Total	
35 Different Responses	
TELEVISION	TELEVISION
38 Radio	18 Watch
33 Watch	11 Show
15 Show	8 Radio
14 Set	7 Program
11 Program	5 Movie, Picture
10 Tube	4 Screen
9 See	3 Programs, See,
7 Picture	Shows
6 Entertainment	2 Commercial, Set,
5 Look	T.V., Time

TABLE C-1 Continued

Males (N=240)	Females (N=110)
TELEVISION (cont.)	TELEVISION (cont.)
4 T.V., TV	0 Illegible
3 Color, Night, Screen, Time, Waste	0 Blank
2 Camera, Commercial, Entertain, Fun, Movie, NBC, News, View, Room, Program	110 Total
0 Illegible	49 Different Responses
1 Blank	
240 Total	
75 Different Responses	
TENNIS	TENNIS
85 Ball	34 Racket
49 Racket	29 Ball
15 Play	10 Play
12 Shoes	7 Game
10 Court	5 Court
9 Sport	4 Racquet
8 Game	3 Balls
7 Balls, Racquet	2 Fun, Sport
5 Fun	0 Illegible
4 Golf, Raquet	0 Blank
3 Shoe	110 Total
2 Exercise, Net	23 Different Responses
0 Illegible	
0 Blank	
239 Total	
32 Different Responses	
THIEF	THIEF
73 Steal	51 Steal
24 Robber	15 Robber
23 Crook	4 Crook
7 Catch	3 Catch
5 Beggar	2 Bandit, Criminal, Man, Night, Run
4 Car, Money, Run	0 Illegible
3 Bad, Cop, Man, Rob, Sneak	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
THIEF (cont.)	THIEF (cont.)
2 Burglar, Burgular, Caught, Cops, Criminal, Honest, Jail, Mask, Night, Police, Prison, Sinner, Stolen	0 Blank
2 Illegible	110 Total
5 Blank	36 Different Responses
239 Total	
73 Different Responses	
THORN	THORN
42 Bush	40 Rose
38 Hurt	21 Hurt
31 Rose	13 Bush
16 Pain	5 Stick
15 Stick	3 Prick, Sharp, Thistle
9 Briar, Ouch	2 Briar, Crown, Side, Sticker
8 Prick	0 Illegible
6 Sharp	0 Blank
5 Side, Sticker, Tree	110 Total
4 Blood, Foot	25 Different Responses
3 Thistle	
2 Barb, Cut, Flesh, Point, Splinter	
0 Illegible	
0 Blank	
239 Total	
49 Different Responses	
THUNDER	THUNDER
111 Lightning	43 Lightning
25 Lightening	20 Lightening
23 Rain	12 Rain
17 Storm	7 Storm
13 Noise	5 Loud, Roar
12 Loud	4 Cloud
10 Cloud	3 Noise
3 Lighting, Road	2 Sky

TABLE C-1 Continued

Males (N=240)	Females (N=110)
THUNDER (cont.)	THUNDER (cont.)
2 Ball, Clouds, Sky	0 Illegible
2 Illegible	0 Blank
0 Blank	110 Total
239 Total	18 Different Responses
26 Different Responses	
TIGER	TIGER
59 Lion	24 Lion
20 Stripes	19 Stripes
16 Cat	7 Fierce
14 Jungle	6 Cat
10 Stripe	5 Growl
7 Animal, Fierce	4 Jungle, Stripe
5 Gun, India	3 Striped, Wild
4 Growl, Hunt, Mean,	2 Africa, Bite, India,
Striped, Yellow	Leopard, Roar,
3 Bengal, Claw, Lily,	Yellow
Strong	1 Illegible
2 Blake, Bright, Danger,	1 Blank
Eat, Kill, Large, Paw,	110 Total
Northside, Shark, Tail,	36 Different Responses
Strength, Strips	
3 Illegible	
0 Blank	
239 Total	
67 Different Responses	
TOBACCO	TOBACCO
81 Smoke	25 Cigarette
19 Pipe	24 Smoke
18 Cigarette	12 Cigar
13 Cigar	8 Cigarettes
9 Barn, Cancer, Chew, Road	7 Field
7 Cigarettes	6 Pipe
6 Brown	3 Kentucky, Leaves
5 Field	2 Fields, Leaf
4 Leaves	0 Illegible

TABLE C-1 Continued

Males (N=240)	Females (N=110)
TOBACCO (cont.)	TOBACCO (cont.)
3 Farm, Plant, Smoking, Work	0 Blank
2 Cigaretts, Cigarrette, Cut, Juice, Smell	110 Total
0 Illegible	28 Different Responses
0 Blank	
240 Total	
50 Different Responses	
TOMATO	TOMATO
90 Red	52 Red
21 Juice	7 Soup
14 Plant	5 Eat
8 Eat, Garden, Vine	4 Garden, Plant
7 Vegetable	3 Juice, Vegetable, Vine
5 Catsup, Ketchup, Soup	2 Fruit, Ketchup, Lettuce, Potato
4 Can, Food, Patch, Potato, Ripe	0 Illegible
3 Girl, Good, Lettuce	0 Blank
2 Bad, Bush, Green, Juicy, Salad, Sauce, Worm	110 Total
0 Illegible	33 Different Responses
1 Blank	
239 Total	
49 Different Responses	
TOWN	TOWN
107 City	47 City
15 House, Small	10 Home
13 Nashville, People	5 Country, House, Nashville
10 Country	4 Hall
8 Home, Village	3 Houses, Small
6 Hall	2 Houston, People, Street, Streets
2 Atlanta, Birmingham, Ship, Street	0 Illegible
0 Illegible	0 Blank
1 Blank	110 Total
240 Total	32 Different Responses
49 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
TRIGGER	TRIGGER
165 Gun	72 Gun
13 Horse	14 Horse
11 Happy	5 Bullet
9 Finger	4 Happy
5 Pull	2 Rifle, Roy, Shoot
4 Bullet, Pistol, Rifle	0 Illegible
2 Guard, Hair, Shoot	0 Blank
0 Illegible	110 Total
0 Blank	16 Different Responses
239 Total	
29 Different Responses	
TROUT	TROUT
153 Fish	58 Fish
25 Stream	13 Stream
13 Fishing	5 Fishing
5 Eat, Speckled	4 Lake
4 Catch, Lake	2 Bones, Eat, Fried,
3 Line	Pole, River
2 Food, Fresh	0 Illegible
0 Illegible	0 Blank
0 Blank	110 Total
240 Total	29 Different Responses
34 Different Responses	
TURTLE	TURTLE
71 Slow	41 Slow
50 Shell	15 Shell
27 Dove	10 Dove
9 Neck	4 Crawl, Egg, Soup
5 Green	2 Lake, Mock, Neck,
4 Animal, Box, Hard, Soup,	Pond
Water	1 Illegible
3 Crawl, Egg, Hare, Rabbit,	0 Blank
Reptile, Tortoise	110 Total
2 Fish, Pet, Rock, Sea,	33 Different Responses
Small, Snake	
0 Illegible	
0 Blank	
240 Total	
50 Different Responses	

TABLE C-1 Continued

Males (N=240)

Females (N=110)

TYPEWRITER

29 Paper
22 Ribbon
18 Keys
17 Type
15 Write
12 Theme
10 Work
7 Key
6 Letter, Machine, Print
5 Words
4 Aid, Electric, Neat,
Office, Secretary
3 Case, Letters, Peck,
Study, Term Paper
2 Click, Desk, Fast, Ink,
Papers, Tap, Themes,
Typing, Writing
0 Illegible
0 Blank
239 Total
64 Different Responses

VINE

115 Grape
34 Wine
14 Grapes
4 Branch, Green, Ivy
3 Bush, Drink, Leaf, Red,
Swing, Tarzan
2 Fruit, Grapevine, Growth,
Morning Glory, Plant, Wall,
Ripened, Tomato, Tree, Twine
4 Illegible
1 Blank
240 Total
44 Different Responses

TYPEWRITER

15 Paper
11 Keys
8 Type
7 Write
6 Work
5 Secretary, Theme
4 Ink, Letter,
Ribbon
3 Fast, Noise
2 Print, Typing
0 Illegible
0 Blank
110 Total
45 Different Responses

VINE

45 Grape
11 Grapes, Wine
5 Green, Ivy
2 Clinging, Tree,
Vinegar
0 Illegible
0 Blank
110 Total
35 Different Responses

TABLE C-1 Continued

Males (N=240)

Females (N=110)

WAFFLE

70 Iron
29 Eat
23 Pancake, Syrup
19 Breakfast
14 Food, Good
4 Flat
3 Grill, Morning
2 Brown, Griddle, Holes,
Kitchen, Maple
0 Illegible
1 Blank
239 Total
43 Different Responses

WATCH

93 Time
32 Clock
11 Fob
9 Chain
8 Hand
7 Pocket, Wrist
6 Crystal
5 See, Tick
4 Dial
3 Band, Glass, Gold,
Look, Stop
2 Broken, Girl, Girls,
Ring, Word
0 Illegible
0 Blank
240 Total
49 Different Responses

WATER

39 Drink
28 Wet
24 Hose
14 Glass

WAFFLE

25 Iron
16 Breakfast, Syrup
11 Eat
6 Food, Pancake
5 Good
3 Butter
2 Cake, Honey,
Morning, Warm
0 Illegible
0 Blank
110 Total
26 Different Responses

WATCH

45 Time
8 Hand
6 Chain, Clock, Stop
4 Band, Tick, Wrist
3 Look
2 Broken, Face, Guard
0 Illegible
0 Blank
110 Total
30 Different Responses

WATER

21 Drink
11 Wet
7 Glass
5 Cold, Hose, Ice

TABLE C-1 Continued

Males (N=240)	Females (N=110)
WATER (cont.)	WATER (cont.)
8 Lake	4 Cool, Faucet, Hot
7 Bucket, Cold	3 Milk
6 Thirsty	2 Fall, Ocean, River,
5 Fire	Sea, Stream, Swim,
4 Cool, H2O, Liquid,	Swimming, Thirst
Pipe, Thirst	0 Illegible
3 Bath, Boat, Cup, Hot,	0 Blank
Ice, Rain, Smoke, Tap	110 Total
2 Fall, Faucet, Fish, Fountain,	43 Different Responses
Good, Hydrant, Hydrogen, Milk,	
River, Sink, Ski, Soap, Well,	
Swimming	
2 Illegible	
0 Blank	
239 Total	
63 Different Responses	
WEDDING	WEDDING
35 Marriage	21 Bride
27 Bride	12 White
16 Cake	10 Marriage
15 Bells	9 Bells
13 Ring	8 Love
9 Happiness	7 Ring
7 Marry, White	4 Happy
6 Happy	3 Cake, Marry
5 Ceremony, Love	2 Beautiful, Church,
4 Flowers, Married	Day, Gown, Sister
3 Bell, Day, Girl, Groom	0 Illegible
2 Beautiful, Church, Dress,	0 Blank
Divorce, Funeral, Good,	110 Total
Husband, Pretty, Reception,	37 Different Responses
Sex, Two, Wife	
0 Illegible	
0 Blank	
239 Total	
79 Different Responses	

TABLE C-1 Continued

Males (N=240)	Females (N=110)
WHALE	WHALE
62 Fish	23 Fish
34 Big	14 Big
20 Mammal	12 Ocean
17 Ocean	7 Water
14 Sea	6 Moby Dick, Spout
10 Large	5 Mammal
8 Water	4 Large, Sea, White
7 Huge, Jonah, Moby Dick	3 Huge, Jonah.
6 White	2 Blubber, Giant,
4 Boat, Bone	Moby
3 Blubber, Blue, Noah, Gil	1 Illegible
2 Animal, Enormous, Harpoon,	0 Blank
Mamal, Moby, Shark, Sperm	110 Total
0 Illegible	27 Different Responses
0 Blank	
239 Total	
37 Different Responses	
WHISKEY	WHISKEY
54 Drink	28 Drink
46 Drunk	16 Drunk
12 Bottle, Sour	8 Sour
11 Liquor	7 Liquor
8 Bourbon	5 Beer, Bottle
7 Beer, Good	4 Alcohol
6 Alcohol, Strong	3 Bad, Bourbon, Party
5 Rum	2 Bitter, Booze, Good,
4 Gin	Smell
3 Booze, Evil, Wine	0 Illegible
2 Bad, Inebriation,	0 Blank
Scotch, Ugh	110 Total
1 Illegible	34 Different Responses
0 Blank	
239 Total	
62 Different Responses	

TABLE C-1 Continued

Male (N=240)	Females (N=110)
WIDOW	WIDOW
29 Woman	15 Death
28 Death	14 Black
18 Black	11 Woman
16 Husband	8 Widower
13 Widower	6 Dead
12 Old	5 Husband, Sad, Sorrow
11 Dead	3 Lonely, Mother, Spider, Wife
10 Spider	2 Alone, Lady, Man, Poor, Soddness
7 Alone	0 Illegible
6 Glass, Lady, Man	0 Blank
4 Lonely, Poor, Sad, Sorrow	110 Total
3 Grandmother, House, Married, Mother, Orphan, See, Wife	36 Different Responses
2 Ledge, Money, Pane, Unhappy, Walk	
0 Illegible	
0 Blank	
239 Total	
58 Different Responses	
WINDOW	WINDOW
60 Glass	12 Open
21 Open	11 Air
19 Air	10 Door, Glass
12 Light, Pane	9 Light
11 Door	7 Pane, View
7 Shade, View	5 Sill
6 Room, Sill	4 Curtain
5 Clear, Look, See	3 Outside
4 Breeze, Curtain, Outside, Sash	2 Scenery, Shade, Sky
3 Blinds, Frame, Out, Pain, Screen	0 Illegible
2 Close, Curtains, Sky	0 Blank
0 Illegible	110 Total
0 Blank	39 Different Responses
240 Total	
52 Different Responses	

TABLE C-1 Continued

Male (N=240)	Females (N=110)
<p>WOMAN</p> <p>148 Man 22 Girl 13 Sex 10 Love 6 Fun 4 Beauty, Pretty 3 Dress, Nice 2 Face, Female, Mother, Wife 0 Illegible 0 Blank 240 Total 32 Different Responses</p> <p>WOOL</p> <p>47 Sheep 45 Sweater 25 Lamb 18 Warm 15 Cotton 13 Coat 9 Suit 7 Hot 5 Cloth 4 Scratchy 3 Clothes, Skirt, Soft 2 Clothing, Heavy, Scratch, Socks, Wear, Winter, Wolf, Worm 1 Illegible 0 Blank 240 Total 47 Different Responses</p> <p>WORKER</p> <p>32 Labor 28 Laborer 26 Hard</p>	<p>WOMAN</p> <p>77 Man 5 Girl 4 Female, Mother 3 Lady 2 Child, Feminine 0 Illegible 0 Blank 110 Total 20 Different Responses</p> <p>WOOL</p> <p>17 Sweater, Warm 13 Skirt 10 Suit 8 Dress 7 Sheep 5 Cotton 4 Hot 3 Clothes, Scratchy, Winter 2 Cloth, Coat, Knit, Soft 0 Illegible 0 Blank 110 Total 27 Different Responses</p> <p>WORKER</p> <p>17 Labor 12 Hard 9 Laborer</p>

TABLE C-1 Continued

Males (N=240)	Females (N=110)
14 Man 10 Sweat, Work 9 Job 6 Factory 5 Union 4 Money, Pay 3 Dirty, Employee, Helper, Slave 2 Building, Construction, Employer, Lazy, Poor, Shovel, Social, Wage 0 Illegible 2 Blank 240 Total 85 Different Responses	4 Church, Factory, Job, Work 3 Employee, Man, Social 2 Busy, Fast, Manual, Slave, Sweat, Tired 0 Illegible 0 Blank 110 Total 51 Different Responses
WORM	WORM
36 Fish 18 Ground, Snake 14 Crawl 13 Earth 10 Bird, Fishing 9 Bait, Dirt 8 Apple, Slimy 5 Small 4 Brown, Squirm, Turn 3 Animal, Insect, Long, Slime, Turns, Wiggle 2 Biology, Hole, Hook, Ring, Snail 1 Illegible 3 Blank 240 Total 64 Different Responses	17 Crawl 10 Fish 9 Slimy 7 Ground 6 Fishing 5 Apple, Snake 3 Hole 2 Bird, Brown, Dirt, Earth, Pink, Slime, Small, Wiggle 1 Illegible 1 Blank 110 Total 46 Different Responses
YOLK	YOLK
152 Egg 14 Ox, Oxen, White 10 Yellow 2 Chicken, Heavy, Work 0 Illegible 3 Blank 240 Total 35 Different Responses	83 Egg 6 Yellow 3 Ox, White 2 Dress, Oxen 0 Illegible 0 Blank 110 Total 17 Different Responses

APPENDIX D
NOUN ASSOCIATION NORMS FOR 40 WORDS

Noun Association

The Noun Association norms were gathered from incoming freshmen during orientation week in September, 1965 at Vanderbilt University. The 240 words were divided into three groups of 80 and presented to three separate groups of students. The words were printed in a single column in a mimeographed booklet which also contained material for the Adjective Association, Frequency of Usage and Evaluation tasks. The three groups were each composed of 280 students (200 males and 80 females).

Each stimulus word was followed by a horizontal line on which the student was to write his association. The instructions were similar to those for Free Association except that they limited the subject to Noun responses. The following excerpts are taken from the instructions printed in the booklet:

"When the instructor tells you to open this booklet, you will find the first part consists of a list of 80 words. You are to write next to each word the first noun that it makes you think of. It doesn't make any difference what noun you write as long as the word on the paper makes you think of it. There are no right or wrong answers. All of you are familiar with the definition of a noun, so there is no need to go into detail. We want to stress that this is not a study of grammar, and not a test of the size of your vocabulary or of your cleverness. We are interested in learning about the structure of word relationships. The word we want is simply the first noun that comes to mind when you read the word in the list.

For example, suppose that COW is one of the words. In the list it will have a line beside it. Write down the first noun that COW makes you think of on the line next to COW. For example, COW might lead to HORSE, or MILK, or HORN, or to some other noun. Whatever noun comes to mind, record it on the line next to COW.

Do the same thing for each word in the list. Print the word clearly; do not write it. Do your best to spell the noun correctly."

The students were asked to work quickly down the list, printing only one word on each line and not skipping any words. They were allowed 15 minutes to complete the task.

In each of the three groups one half the students received booklets in which the Noun Association task was the first in the booklet. For the other half the Adjective Association task preceded the Noun Association task. For this second half, the Noun instructions to the subject were a brief statement that the task was the same as that he had just finished except he was to supply Nouns rather than Adjectives.

Each of the 240 words served as a stimulus in noun association for 280 students. Response hierarchies for 40 of these words are contained in Table D-1. These words are the same as those in Appendices E and F. They represent the extreme ends of the JM and DV scores, as described in Appendix F. The hierarchies are arranged alphabetically by stimulus word. Hierarchies for males and females are listed in parallel for ease of comparison and for ease of combining, if desired. "Single" responses, that is, associations given by only one subject, are not listed. The number of single responses given to a particular stimulus word can be calculated by counting the number of different responses listed and

subtracting from "Different Responses", since this category has included singles in its tally.

This sample of response hierarchies conveys the general features common to all of the words.

Space and cost limitations prohibit a more complete listing of the Noun Association norms.

TABLE D-1

NOUN ASSOCIATION NORMS FOR 40 WORDS

Males (N=200)	Females (N=80)
ASH	ASH
49 Tray	21 Tray
33 Fire	19 Fire
29 Cigarette	14 Cigarette
18 Can	6 Can
13 Tree	4 Tree
9 Smoke	2 Fireplace
8 Wood	0 Illegible
7 Cigar	0 Blank
3 Ashtray	80 Total
2 Burn, Cigarette, Cigarettes, Cigarette, Dirt, Wednesday	20 Different Responses
0 Illegible	
0 Blank	
200 Total	
34 Different Responses	
AUTOMOBILE	AUTOMOBILE
114 Car	47 Car
10 Tire	3 Crash, Street, Wreck
9 Wreck	2 Accident, Bus, Drive, Road, Travel, Truck
5 Transportation, Wheels	0 Illegible
4 Accident, Road	0 Blank
3 Driver, Street, Truck	80 Total
2 Corvette, Drive, Highway, Money, Oxen, Speed, Wheel	22 Different Responses
0 Illegible	
0 Blank	
200 Total	
43 Different Responses	
BANDIT	BANDIT
56 Thief	20 Thief
35 Robber	19 Robber
17 Gun, Outlaw	6 Mask
12 Crook	4 Gun
10 Mask	3 Cowboy, Outlaw

TABLE L-1 Continued

Males (N=200)

Females (N=80)

BANDIT (cont.)

4 Cowboy
3 Criminal, Gangster, Holdup,
Mexican, Robbery
2 Money, Police, Sheriff, Steal
0 Illegible
0 Blank
200 Total
42 Different Responses

BANKER

95 Money
18 Bank
15 Teller
14 Lawyer
9 Man
5 Clerk
3 Businessman, Financier,
Office, Trust
2 Baker, Daughter, Executive,
Rich, Worker
0 Illegible
0 Blank
200 Total
37 Different Responses

BEE

52 Honey
38 Hive, Sting
12 Stinger
9 Wasp
8 Insect
7 Flower
3 Bird, Buzz, Fly, Line
2 Birds, Bonnet, Nest, Queen,
Tree
0 Illegible
0 Blank
200 Total
30 Different Responses

BANDIT (cont.)

2 Hold Up, Robbery, Theif
0 Illegible
0 Blank
80 Total
28 Different Responses

BANKER

27 Money
12 Bank
10 Teller
5 Man
4 Lawyer
3 Father
2 Business
0 Illegible
0 Blank
80 Total
24 Different Responses

BEE

22 Honey
18 Sting
12 Hive
4 Stinger
3 Flower, Insect
2 Bird, Clover, Wasp
0 Illegible
0 Blank
80 Total
21 Different Responses

TABLE D-1 Continued

Males (N=200)	Females (N=80)
BEGGAR	BEGGAR
32 Thief	10 Money
22 Poor	7 Man, Rags, Thief
16 Bum	6 Poverty
13 Money	4 Bum
10 Man	3 Pauper
9 Pauper	2 Benefactor, Borrower, Bread, Mendicant, Poor, Poor Man, Street
6 Cup, Rags	0 Illegible
3 Hobo, Loafer, Poverty Ragged, Thief, Tramp	0 Blank
2 Alms, Clothes, Derelict, Dirt, Mendicant, Street, Vagrant	80 Total
0 Illegible	36 Different Responses
1 Blank	
200 Total	
74 Different Responses	
BOWL	BOWL
35 Cereal	13 Cereal
23 Soup	10 Dish
17 Ball	7 Soup, Spoon
13 Dish	5 Ball, Fruit
11 Spoon	3 Alley
8 Cup, Sugar	2 Cup, Game, Plate, Saucer, Sugar
7 Fruit, Pins	0 Illegible
6 Plate	0 Blank
5 Alley, Salad	80 Total
4 Fish	32 Different Responses
3 Finger, Football, Jar	
2 Game, Milk, Pin, Saucer	
0 Illegible	
0 Blank	
200 Total	
54 Different Responses	
BROTHER	BROTHER
138 Sister	51 Sister
12 Boy	5 Friend
10 Friend	2 Boy, Jimmy

TABLE D-1 Continued

Males (N=200)	Females (N=80)
BROTHER (cont.)	BROTHER (cont.)
5 Family	0 Illegible
2 Father, Football, Fraternity, Relative	0 Blank
0 Illegible	80 Total
0 Blank	24 Different Responses
200 Total	
35 Different Responses	
CAR	CAR
25 Automobile	9 Automobile
15 Truck	5 Gas, Motor, Truck
12 Transportation	3 Auto, Bus, Seat
10 Wax	2 Driver, Garage, Tire, Train, Transportation, Travel, Wax, Wheel
9 Auto	0 Illegible
8 Bus, Driver	0 Blank
7 Motor, Tire, Wheel	80 Total
6 Road	46 Different Responses
5 Door, Train, Wheels	
4 Engine, Ford, Garage	
3 Boat, Speed, Street, Wreck	
2 Accident, Chevy, Date, Gas Window	
0 Illegible	
0 Blank	
200 Total	
63 Different Responses	
CASTLE	CASTLE
31 Moat	9 King
25 Knight	7 Moat
13 King	5 House, Sand, Spain
11 Stone	4 Mansion
8 House	3 Princess, Tower
7 Mansion, Rock	2 England, Knight, Knights, Palace, Sky, Stone
6 Tower	0 Illegible
5 England, Hill, Home, Stones	0 Blank
4 Clouds, Fort, Sand, Wall	80 Total
3 Palace, Sky, Spain, Turret	41 Different Responses
2 Building, Dungeon, Fortress	

TABLE D-1 Continued

Males (N=200)

Females (N=80)

CASTLE (cont.)

2 Giant, Prince, Walls
0 Illegible
0 Blank
200 Total
58 Different Responses

CAT

159 Dog
7 Fur, Mouse
5 Kitten
2 Mice, Tail
0 Illegible
0 Blank
200 Total
24 Different Responses

CHEESE

35 Mouse
34 Milk
24 Cake
13 Crackers
10 Food
8 Holes
7 Sandwich
4 Bread, Butter, Cow, Cracker,
Mice, Rat, Swiss
3 Ham
2 Camera, Cloth, Cottage,
Mold, Smile
0 Illegible
1 Blank
200 Total
47 Different Responses

CAT

67 Dog
2 Mouse
0 Illegible
0 Blank
80 Total
13 Different Responses

CHEESE

15 Milk
12 Mouse
9 Cake
6 Crackers
5 Bread, Mice
4 Sandwich
3 Cracker
2 Cow, Meat
0 Illegible
0 Blank
80 Total
27 Different Responses

TABLE D-1 Continued

Males (N=200)

Females (N=80)

DOCTOR

42 Nurse
 37 Lawyer
 28 Medicine
 14 Physician
 11 Patient
 8 Man
 4 Healer, Sickness
 3 Hospital, Illness, Office
 2 Cure, Father, Friend, Health,
 Professional, Surgeon, Witch
 0 Illegible
 0 Blank
 200 Total
 47 Different Responses

DOG

119 Cat
 12 Pet
 8 Friend
 5 Animal
 4 Bark
 3 House, Leash
 2 Bite, Bone Catcher, Cocker,
 Fleas, Puppy
 0 Illegible
 1 Blank
 200 Total
 46 Different Responses

DUCK

28 Goose
 17 Water
 15 Hunt
 14 Bird
 10 Hunting, Lake
 9 Pond
 8 Feathers, Mallard
 7 Blind
 6 Quack
 5 Bill

DOCTOR

31 Nurse
 8 Lawyer
 7 Medicine
 6 Man
 3 Father, Health, Office,
 Physician
 2 Patient, Sickness
 0 Illegible
 0 Blank
 80 Total
 22 Different Responses

DOG

52 Cat
 4 Friend, Pet
 2 Beagle, Collie
 0 Illegible
 0 Blank
 80 Total
 21 Different Responses

DUCK

10 Goose, Pond, Water
 8 Bill
 6 Lake, Swan
 4 Bird
 3 Quack
 2 Feather
 0 Illegible
 0 Blank
 80 Total
 30 Different Responses

TABLE D-1 Continued

Males (N=200)

Females (N=80)

DUCK (cont.)

4 Chicken, Feather, Hunter
 3 Food, Geese
 2 Feet, Fowl, Gun, Shotgun
 Soup, Swim, Walk, Wings
 0 Illegible
 0 Blank
 200 Total
 54 Different Responses

DUST

89 Dirt
 10 Ashes
 7 Cloth, Man
 5 Bowl
 4 Death, Ground
 3 Cloud, Dawn, Dirty, Earth,
 Mop, Road, Star, Table
 2 Ash, Cough, Floor, Rag, Sand
 Smoke, Storm, Water, Win'
 0 Illegible
 0 Blank
 200 Total
 56 Different Responses

GIN

26 Whiskey
 23 Tonic
 22 Vodka
 20 Drink
 15 Liquor
 11 Rummy
 10 Cotton
 9 Bottle
 7 Alcohol
 6 Rum
 4 Drunk, Whisky
 3 Beer, Cotten, Glass
 2 Ale, Bourbon, Cards, Martini,
 Mill, Scotch

DUST

30 Dirt
 5 Ashes
 4 Mop
 3 Earth, Rag, Smoke
 2 Ash, Cloth
 1 Illegible
 0 Blank
 80 Total
 35 Different Responses

GIN

21 Tonic
 10 Whiskey
 9 Vodka
 8 Drink
 6 Liquor
 4 Bottle, Rum
 3 Cotton
 2 Alcohol, Beer, Bourbon
 Rummy
 0 Illegible
 0 Blank
 80 Total
 19 Different Responses

TABLE D-1 Continued

Males (N=200)

Females (N=80)

DUCK (cont.)

4 Chicken, Feather, Hunter
3 Food, Geese
2 Feet, Fowl, Gun, Shotgun
Soup, Swim, Walk, Wings
0 Illegible
0 Blank
200 Total
54 Different Responses

DUST

89 Dirt
10 Ashes
7 Cloth, Man
5 Bowl
4 Death, Ground
3 Cloud, Down, Dirty, Earth,
Mop, Road, Star, Table
2 Ash, Cough, Floor, Rag, Sand
Smoke, Storm, Water, Wind
0 Illegible
0 Blank
200 Total
56 Different Responses

GIN

26 Whiskey
23 Tonic
22 Vodka
20 Drink
15 Liquor
11 Rummy
10 Cotton
9 Bottle
7 Alcohol
6 Rum
4 Drunk, Whisky
3 Beer, Cotton, Glass
2 Ale, Bourbon, Cards, Martini,
Mill, Scotch

DUST

30 Dirt
5 Ashes
4 Mop
3 Earth, Rag, Smoke
2 Ash, Cloth
1 Illegible
0 Blank
80 Total
35 Different Responses

GIN

21 Tonic
10 Whiskey
9 Vodka
8 Drink
6 Liquor
4 Bottle, Rum
3 Cotton
2 Alcohol, Beer, Bourbon
Rummy
0 Illegible
0 Blank
80 Total
19 Different Responses

TABLE D-1 Continued

Males (N=200)	Females (N=80)
GIN (cont.)	
0 Illegible	
0 Blank	
200 Total	
43 Different Responses	
GOOSE	GOOSE
40 Duck	18 Gander
35 Gander	13 Duck
18 Egg	8 Egg
14 Bird	5 Feathers
13 Neck	4 Feather
6 Feathers	3 Mother
4 Bill, Geese, Hunting	2 Bird, Farm, Noise
3 Down, Farm, Feather, Hunt	0 Illegible
2 Animal, Chicken, Flesh, Food,	0 Blank
Girl, Liver, Mother	80 Total
0 Illegible	32 Different Responses
0 Blank	
200 Total	
56 Different Responses	
GOVERNOR	GOVERNOR
54 State	37 State
16 Mansion	8 Mansion
11 Man	5 Mayor
10 Mayor	4 Man, Senator
8 Senator	2 Government, Leader, Politician
7 Capitol, Leader, President	0 Illegible
6 Office, Official	0 Blank
5 Law, Politician, Politics	80 Total
4 Government, Power, Ruler	24 Different Responses
3 Clement	
2 Capital, General, Kentucky,	
Legislature, Money, Person,	
Wallace	
0 Illegible	
0 Blank	
200 Total	
48 Different Responses	

TABLE D-1 Continued

Males (N=200)

GUN

34 Rifle
 21 Pistol
 20 Bullet
 11 Barrel
 9 Weapon
 8 Shot
 6 Shoot
 5 Rack, Trigger
 4 Hunt, Shotgun
 3 Bullets, Cannon, Death,
 Knife, Smoke, War
 2 Ammunition, Army, Barrell,
 Fight, Kill, Killer, Man,
 Point, Sheep, Target
 0 Illegible
 0 Blank
 200 Total
 62 Different Responses

HONEY

94 Bee
 12 Bees
 11 Girl, Sugar
 7 Milk, Sweet, Syrup
 5 Comb
 4 Bear, Dew, Jar, Sweetness
 3 Toast
 2 Food
 0 Illegible
 0 Blank
 200 Total
 39 Different Responses

HUT

40 House
 37 Shack
 14 Grass
 13 Cabin
 10 Native

Females (N=80)

GUN

12 Bullet
 10 Holster, Rifle
 5 Shot
 4 Cowboy, Pistol
 3 Death, Hunt, Murder
 2 Policeman
 0 Illegible
 0 Blank
 80 Total
 34 Different Responses

HONEY

38 Bee
 9 Bees
 5 Syrup
 4 Sugar
 3 Milk
 2 Biscuit, Bread, Jar
 0 Illegible
 0 Blank
 80 Total
 23 Different Responses

HUT

14 Shack
 10 House
 6 Cabin, Straw
 4 Grass
 3 Home, Island, Native

TABLE D-1 Continued

Males (N=200)	Females (N=80)
HUT (cont.)	HUT (cont.)
7 Jungle	2 Cottage, Forest, Hawaii,
5 Island, Mud	Tent, Thatch, Village
3 Bamboo, Food, Hermit, Home,	0 Illegible
Hovel, Poverty, Straw, Village	0 Blank
2 Clay, Cottage, People, Shanty	80 Total
Tent, Weeds	33 Different Responses
0 Illegible	
0 Blank	
200 Total	
55 Different Responses	
INK	INK
99 Pen	41 Pen
16 Blot	6 Bottle, Stain
14 Bottle	4 Well
13 Well	3 Black, Pencil, Spot
9 Spot, Stain	2 Writing
6 Blotter	0 Illegible
5 Paper, Write	0 Blank
4 Black	80 Total
3 Writing	20 Different Responses
2 Liquid, Pencil	
0 Illegible	
0 Blank	
200 Total	
26 Different Responses	
JAIL	JAIL
43 Bars	29 Bars
24 Prison	12 Prison
23 Cell	7 Cell, Prisoner
14 House	6 House
10 Police	4 Key
9 Bird	3 Bird
7 Prisoner	2 Police
6 Pokey	0 Illegible
5 Criminal	0 Blank
3 Bail, Bar, Crime	80 Total
2 Closet, Door, Key, Law	18 Different Responses

TABLE D-1 Continued

Males (N=200)

Females (N=80)

JAIL (cont.)

2 Prisoners, Sentence
 0 Illegible
 0 Blank
 200 Total
 56 Different Responses

KING

139 Queen
 6 Crown
 5 Ruler
 4 Castle, Throne
 3 Power
 2 Corn, Country, Kingdom,
 Kong, Reign
 1 Illegible
 0 Blank
 200 Total
 39 Different Responses

LION

67 Tiger
 13 Animal
 12 King
 10 Cat
 9 Mane
 7 Jungle
 5 Den, Hunter, Sheep
 3 Cage, Cub, Lamb, Lioness,
 Mouse, Teeth, Zoo
 2 Beast, Claws, Male, Roar,
 Sleep
 0 Illegible
 1 Blank
 200 Total
 56 Different Responses

KING

67 Queen
 3 Crown
 0 Illegible
 0 Blank
 80 Total
 12 Different Responses

LION

33 Tiger
 6 Mane
 5 Den, King
 3 Animal, Cage, Cub, Jungle
 2 Africa, Cat, Mouse, Sheep
 0 Illegible
 0 Blank
 80 Total
 23 Different Responses

TABLE D-1 Continued

Males (N=200)

Females (N=80)

MOUSE

64 Rat
 52 Cat
 21 Trap
 13 Hole
 7 Cheese, House
 3 Mice, Rodent
 2 Elephant, Lion
 1 Illegible
 0 Blank
 200 Total
 35 Different Responses

OCEAN

98 Sea
 30 Water
 8 Fish
 6 Lake, Salt, Waves
 4 Liner, Wave
 3 Beach, River, Sand
 2 Atlantic, Sky, Travel
 0 Illegible
 0 Blank
 200 Blank
 37 Different Responses

PEN

119 Pencil
 49 Ink
 9 Paper
 4 Letter
 3 Name
 2 Ballpoint
 0 Illegible
 0 Blank
 200 Total
 20 Different Responses

MOUSE

24 Rat
 14 Cat
 10 Trap
 7 Cheese
 5 Hole
 3 Tail
 2 Fur, Mice
 0 Illegible
 0 Blank
 80 Total
 21 Different Responses

OCEAN

39 Sea
 7 Water
 5 Waves
 3 Lake, Salt, Ship, Wave
 2 River, Sky
 0 Illegible
 0 Blank
 80 Total
 22 Different Responses

PEN

49 Pencil
 21 Ink
 2 Letter, Point
 0 Illegible
 0 Blank
 80 Total
 10 Different Responses

TABLE D-1 Continued

Males (N=200)

Females (N=80)

PHYSICIAN

150 Doctor
6 Medicine
4 Hospital
3 Lawyer, Office
2 Father, Health, Man
Nurse, Patient
0 Illegible
0 Blank
200 Total
34 Different Responses

PHYSICIAN

47 Doctor
5 Father
4 Hospital
3 Medicine, Nurse
0 Illegible
0 Blank
80 Total
23 Different Responses

PRISON

62 Jail
29 Cell
24 Bars
8 Bar, Walls
6 Crime
5 Convict, Inmate, Prisoner
3 Camp, Guard, Inmates, Men, Wall
2 Confinement, Criminal, Prisoners
Sentence, Warden
0 Illegible
0 Blank
200 Total
42 Different Responses

PRISON

18 Jail
17 Bars
10 Cell
2 Bar, Criminal, Prisoner
0 Illegible
0 Blank
80 Total
35 Different Responses

SEA

58 Ocean
36 Water
16 Waves
11 Ship
7 Fish, Shore
6 Boat
5 Wave
4 Beach
3 Horse, Salt
2 Blue, Clouds, Lake,
Life, Storm

SEA

31 Ocean
15 Water
6 Shore
4 Waves
3 Fish, Wave
2 Foam, Sand, Shell
0 Illegible
0 Blank
80 Total
21 Different Responses

TABLE D-1 Continued

Males (N=200)	Females (N=80)
SEA (cont.)	
0 Illegible	
0 Blank	
200 Total	
50 Different Responses	
SOAP	SOAP
53 Water	24 Water
16 Shower	9 Dish
10 Dish, Towel	7 Bath, Cleanliness, Towel
9 Bath, Suds	4 Suds
8 Wash	2 Cloth, Face, Powder, Shower, Wash Cloth, Washcloth, Washing
7 Bar, Clean	0 Illegible
6 Cleanliness	0 Blank
5 Lather	80 Total
4 Cloth, Washcloth	21 Different Responses
3 Box, Bubbles, Smell	
2 Bathe, Cleaner, Dial, Face, Hands, Opera, Rag, Tooth- paste, Washing	
0 Illegible	
0 Blank	
200 Total	
50 Different Responses	
SPIDER	SPIDER
109 Web	49 Web
21 Insect	5 Bug
11 Bug	4 Legs
8 Fly	2 Fear, Fly, Insect Snake, Wall
6 Legs	0 Illegible
3 Ant, Bite, Sting, Webb	0 Blank
2 Black Widow, Leg, Silk, Wed	80 Total
0 Illegible	20 Different Responses
0 Blank	
200 Total	
38 Different Responses	

TABLE D-1 Continued

Males (N=200)	Females (N=80)
<p>STEP</p> <p>52 Stairs 18 Ladder 16 Stair 14 Walk 13 Foot 8 House, Porch 5 Fall, Stairway, Stone 3 Door, Father, Feet 2 Concrete, Floor, Hall, Rail, Stool, Wood 0 Illegible 0 Blank 200 Total 54 Different Responses</p> <p>THIEF</p> <p>33 Robber 22 Crook 15 Money 12 Police 10 Burglar 9 Jail 7 Man, Steal 6 Jewels 5 Robbery 3 Crime, Criminal, Mask, Window 2 Bandit, Bum, Burgler, Cop, Hoodlum, Jewel, Knife, Law, Loot, Night, Sneak, Theft 0 Illegible 0 Blank 200 Total 64 Different Responses</p> <p>TIGER</p> <p>62 Lion 20 Cat 18 Stripes</p>	<p>STEP</p> <p>23 Stairs 9 Stair 7 Ladder 6 Foot 5 Walk 4 House 2 Building, Cement, Door, Pace, Porch, Staircase, Stairway, Stone 0 Illegible 0 Blank 80 Total 24 Different Responses</p> <p>THIEF</p> <p>21 Robber 6 Mask, Robbery 5 Money 4 Gun, Man 3 Burglar 2 Bandit, Burgler, Jewelry, Jewels, Store 0 Illegible 0 Blank 80 Total 33 Different Responses</p> <p>TIGER</p> <p>23 Lion 11 Jungle 7 Stripes, Tank</p>

TABLE D-1 Continued

Males (N=200)	Females (N=80)
TIGER (cont.)	TIGER (cont.)
14 Jungle	6 Cat
10 Animal	3 Gasoline, Stripe
6 Tank	2 Bear, Lady
4 Gasoline, Stripe	0 Illegible
3 Africa, Elephant, Lady, Tail	0 Blank
2 Claws, Danger, Gun, India, Poem, Strips	80 Total
0 Illegible	25 Different Responses
0 Blank	
200 Total	
56 Different Responses	
TRIGGER	TRIGGER
165 Gun	73 Gun
11 Pistol	2 Pistol
4 Finger, Rifle	0 Illegible
3 Bullet	0 Blank
2 Horse	80 Total
0 Illegible	7 Different Responses
0 Blank	
200 Total	
17 Different Responses	
WATER	WATER
32 Lake	9 Lake
14 Drink	8 Glass
10 Hole	6 Drink
9 Bottle, Sea	5 Ocean, Stream
8 Thirst	4 Fish, River
7 Boat, Liquid, Ocean	3 Hole, Liquid, Sea, Thirst
6 Glass	2 Boat, Bucket, Milk, Ship, Ski
5 Bucket, Well	0 Illegible
4 Fish	0 Blank
3 Cup, Hose, Pool, River, Stream	80 Total
Wet	33 Different Responses
2 Buffalo, Creek, Fountain, Horse, Ice, Pail, Pipe, Pond	

TABLE D-1 Continued

Males (N=200)	Females (N=80)
WATER (cont.)	
0 Illegible	
1 Blank	
200 Total	
69 Different Responses	
WIDOW	WIDOW
33 Death, Husband	15 Death, Woman
26 Woman	11 Husband
14 Widower	5 Widower
7 Lady, Wife	3 Door, Spider, Wife
5 Man, Mother, Orphan	2 Black, Lady, Mourning,
4 Black, Children, Grief	Sadness
3 Glass, Spider	0 Illegible
2 Grandmother, Lace, Loneliness,	0 Blank
Marriage, Pane	80 Total
0 Illegible	28 Different Responses
0 Blank	
200 Total	
56 Different Responses	

APPENDIX E

ADJECTIVE ASSOCIATION NORMS FOR 40 WORDS

Adjective Association

The Adjective Association norms were also gathered from incoming freshmen during orientation week in September, 1965 at Vanderbilt University. The 240 stimulus words were divided into three groups of 80 and presented to three groups of students. The words were printed in a single column in a mimeographed booklet which also contained material for the Noun Association, Frequency of Usage and Evaluation tasks. The three groups were each composed of 280 students (200 males and 80 females).

Each stimulus word was followed by a horizontal line on which the student was to write his association. The instructions were similar to those for Noun Association except that they limited the subject to Adjective responses. The following paragraphs are taken from the instructions printed in the booklet:

"When the instructor tells you to open this booklet, you will find the first part consists of a list of 80 words. You are to write next to each word the first adjective that it makes you think of. It doesn't make any difference what adjective you write as long as the word on the paper makes you think of it. There are no right or wrong answers. All of you are familiar with the definition of an adjective, so there is no need to go into detail. We want to stress that this is not a study of grammar, and not a test of the size of your vocabulary or of your cleverness. We are interested in learning about the structure of word relationships. The words we want are simply the first adjective that comes to

mind when you read the word in the list. It is not necessary to supply a different adjective for each word in the list. If an adjective seems appropriate for more than one list word, put it down for each of them.

"For example, suppose that COW is one of the words. In the list it will have a line beside it. Write down the first adjective that COW makes you think of on the line next to COW. For example, COW might lead to BROWN, or SPOTTED, or PATIENT, or to some other adjective. Whatever adjective comes to mind, record it on the line next to COW.

Do the same thing for each word in the list. Print the word clearly; do not write it. Do your best to spell the adjective correctly."

The students were asked to work quickly down the list, printing only one word on each line and not skipping any words. They were allowed 15 minutes to complete the task.

In each of the three groups one half the students received booklets in which the Adjective Association task was the first in the booklet. For the other half the Noun Association task preceded the Adjective Association task. For this second half, the Adjective instructions to the subject were a brief statement that the task was the same as that he had just finished except he was to supply Adjectives rather than Nouns.

Each of the 240 words served as a stimulus in adjective association for 280 students. The response hierarchies for 40 of these words are contained in Table E-1. These words are the same

as those in Appendices D and F. They represent the extreme ends of the JM and DV scores, as described in Appendix F. The hierarchies are arranged alphabetically by stimulus word. Hierarchies for males and females are listed in parallel for ease of comparison and for ease of combining, if desired. "Single" responses, that is, associations given by only one subject, are not listed. The number of single responses given to a particular stimulus word can be calculated by counting the number of different responses listed and subtracting from "Different Responses", since this category has included singles in its tally.

As in the case of the controlled association-noun task, space and cost limitations prohibit a more complete listing of the Adjective Association norms.

TABLE E-1

ADJECTIVE ASSOCIATION NORMS FOR 40 WORDS

Males (N=200)	Females (N=80)
ASH	ASH
21 Gray	13 Black
19 Black	12 Gray
18 Hot	10 Grey
15 Dirty	8 Dirty
12 Grey	4 Burnt, Cigarette
11 Cigarette	3 Burning, Dusty, Smoky
7 White	2 Dead, Sooty
6 Burnt	0 Illegible
5 Burning, Dead, Light, Long	0 Blank
3 Burned, Cold, Dusty, Fire, Wood	80 Total
2 Brown, Cigar, Dirt, Dry, Smoke	27 Different Responses
Smokey, Smoky, Soft, Sooty, Wooden	
0 Illegible	
0 Blank	
200 Total	
63 Different Responses	
AUTOMOBILE	AUTOMOBILE
77 Fast	25 Fast
15 New	7 New
5 Dangerous, Sharp	4 Blue
4 Old, Powerful	3 Red
3 Blue, Convenient, Moving, Red	2 Big, Convenient, Moving, Old, Powerful, Pretty, Shiny, Sleek, Swift, Wrecked, Yellow
Shiny, Tough	0 Illegible
2 Beautiful, Big, Car, Fun, Large, Mobile, Necessary, Nice, Sleek, Small, Speedy	0 Blank
0 Illegible	80 Total
0 Blank	34 Different Responses
200 Total	
73 Different Responses	

TABLE E-1 Continued

Males (N=200)	Females (N=80)
BANDIT	BANDIT
57 Bad	29 Bad
17 Masked	5 Masked, Mean
14 Mean	3 Black, Evil, Rough
9 Evil	2 Armed, Exciting, Sneaky
7 Black, Dangerous	0 Illegible
6 Dirty	0 Blank
4 Notorious	80 Total
3 Armed, Ugly	35 Different Responses
2 Crooked, Desperate, Dishonest, Heinous, Illegal, Red, Sly, Terrible, Wrong	
0 Illegible	
0 Blank	
200 Total	
74 Different Responses	
BANKER	BANKER
78 Rich	21 Rich
12 Honest	4 Distinguished, Stuffy
9 Wealthy	3 Trustworthy, Wealthy
6 Smart	2 Fat, Intelligent, Respec- table, Stingy
5 Important, Well Dressed	0 Illegible
3 Big, Fat, Friendly, Intelligent, Money, Poor, Powerful, Trustworthy	0 Blank
2 Good, Neat, Old, Quiet, Responsible, Thrifty, Wall Street	80 Total
0 Illegible	46 Different Responses
1 Blank	
200 Total	
67 Different Responses	
BEE	BEE
30 Buzzing	15 Honey
23 Honey	14 Buzzing
21 Bumble	9 Bumble
14 Busy	6 Busy
12 Stinging	4 Small, Stinging, Yellow
10 Painful	2 Dangerous, Industrious, Nasty, Sweet
9 Yellow	0 Illegible
8 Small	

TABLE E-1 Continued

Males (N=200)

Females (N=80)

BEE (cont.)

4 Dangerous, Hunt, Little, Mean
3 Buzzy, Sting, Sweet
2 Bothersome, Fast, Flying,
Furry, Harmful, Humming,
Industrious, Irritating,
Queen, Sharp, Smart
0 Illegible
1 Blank
200 Total
51 Different Responses

BEE (cont.)

0 Blank
80 Total
27 Different Responses

BEGGAR

105 Poor
12 Dirty
6 Pitiful
5 Ragged
4 Lazy, Shabby, Unfortunate
3 Needy
2 Filthy, Humble, Indigent, Lonely,
Lowly, Old, Sloppy, Ugly,
Wretched
0 Illegible
0 Blank
200 Total
56 Different Responses

BEGGAR

50 Poor
4 Sad
3 Pitiful, Ragged
2 Humble, Lazy,
Needy, Stupid
0 Illegible
0 Blank
80 Total
20 Different Responses

BOWL

67 Round
12 Cereal
9 Deep
8 Full
6 Empty
5 Big, Large, Salad, Small,
Soup, Sugar
4 Blue
3 Clean, Cotton, Fruit, Fun
Shallow
2 China, Football, Glass, Hollow,
Orange, Wet, White

BOWL

29 Round
3 Cereal, Empty, Large,
Soup, White
2 Finger, Full, Mixing,
Yellow
0 Illegible
0 Blank
80 Total
38 Different Responses

TABLE E-1 Continued

Males (N=200)	Females (N=80)
BOWL (cont.)	
0 Illegible	
0 Blank	
200 Total	
59 Different Responses	
BROTHER	
34 Big	9 Big
17 Older	8 Older
14 Little	6 Great, Little
10 Younger	5 Fun
6 Friendly	4 Nice
5 Close, Good, Kind, Nice, Tall	2 Bothersome, Handsome,
4 Helpful, Sister, Smart, Young	Helpful, Kind, Loving,
3 Great, Small	Sister, Wonderful
2 Bothersome, Cool, Cute, Dear,	0 Illegible
Happy, Intelligent, Loving,	0 Blank
Loyal, Mean, My, Strong,	80 Total
Understanding	41 Different Responses
0 Illegible	
0 Blank	
200 Total	
76 Different Responses	
CAR	
66 Fast	21 Fast
17 New	10 New
14 Red	5 Blue
9 Blue	4 Moving
7 Shiny	3 Red
4 Beautiful, Moving, White	2 Black, Green, Old, Sports,
3 Convenient, Sports	Sporty
2 Big, Black, Clean, Dirty,	0 Illegible
Mobile, Old, Powerful,	0 Blank
Sharp, Sporty, Wax	80 Total
0 Illegible	37 Different Responses
0 Blank	
200 Total	
69 Different Responses	

TABLE E-1 Continued

Males (N=200)

Females (N=80)

CASTLE

24 Old
 16 Stone
 14 Large
 11 High
 9 Gray
 8 Big, Grey
 7 Huge
 6 Fortified, Haunted
 5 Ancient, Medieval, Strong
 4 Majestic
 3 Towering
 2 Enormous, Fairy, Foreboding,
 Formidable, Giant, Gloomy,
 Imposing, Massive, Moated,
 Rich, Sand, Stony, Tall, White
 0 Illegible
 0 Blank
 200 Total
 70 Different Responses

CAT

55 Black
 14 Soft
 13 Furry
 8 Mean
 6 Gray, Sly
 5 Brown, Quick
 4 Alley, Independent, Tom, White
 3 Dog, Pretty, Quiet
 2 Agile, Cute, Fat, Feline, Fluffy
 Playful, Siamese, Sleepy, Small
 0 Illegible
 0 Blank
 200 Total
 69 Different Responses

CASTLE

4 Beautiful, Huge, Large
 3 Big, Old, Strong
 2 Ancient, Grand, Grey,
 Majestic, Medieval,
 Stone, Tall
 0 Illegible
 0 Blank
 80 Total
 58 Different Responses

CAT

10 Soft
 6 Black
 5 Furry, Siamese
 3 Persian, White, Yellow
 2 Cuddly, Dog, Tom
 0 Illegible
 0 Blank
 80 Total
 49 Different Responses

TABLE E-1 Continued

Males (N=200)	Females (N=80)
CHEESE	CHEESE
41 Yellow	18 Yellow
25 Swiss	9 Blue
14 Sharp	7 Sharp
10 Green	6 Green
9 Smelly	3 Swiss
8 Blue	2 American, Cheddar, Creamy,
7 Cheddar	Delicious, Holey, Moldy,
6 Tasty	Orange, Smelly, Tangy,
5 Moldy	Tart, Tasty
4 Bitter, Tangy	0 Illegible
3 Mellow, Strong	0 Blank
2 American, Crackers, Cream,	80 Total
Delicious, Good, Mild, Milk,	31 Different Responses
Old, Orange, Rotten, Sour,	
Spoiled	
0 Illegible	
0 Blank	
200 Total	
62 Different Responses	
DOCTOR	DOCTOR
19 Good	15 Good
16 Patient	8 Intelligent
15 White	6 Kind
14 Smart	4 Understanding
12 Helpful	3 Dedicated, Patient,
11 Kind	Smart, White
8 Medical	2 Lawyer, Nice, Overworked,
6 Intelligent, Rich, Wise	Powerful, Wise
4 Clean	0 Illegible
3 Competent, Excellent, Healing,	0 Blank
Help, Learned, Quack, Qualified,	80 Total
Wealthy	38 Different Responses
2 Bad, Educated, Fine, Friendly,	
Gentle, Healthy, Nice, Quiet	
0 Illegible	
0 Blank	
200 Total	
70 Different Responses	

TABLE E-1 Continued

Males (N=200)

Females (N=80)

DOG

40 Friendly
 12 Barking, Brown
 9 Mean
 7 Small
 6 Black
 5 Good, Nice, Old
 4 Big, Faithful, Spotted
 3 Furry, Hairy, Large, Mangy
 2 Bad, Bark, Cute, Dumb, Fierce,
 Great, Happy, Lazy, Loyal, Mad
 Playful, Shaggy, Smart, Wet
 0 Illegible
 0 Blank
 200 Total
 77 Different Responses

DUCK

33 White
 11 Flying
 9 Quacking, Wild
 8 Dead
 6 Mallard, Wet
 4 Feathered, Graceful, Tasty,
 Ugly, Waddling
 3 Black, Brown, Large, Noisy,
 Small, Soft, Yellow
 2 Aquatic, Awkward, Cute, Donald,
 Downy, Fast, Green, Lame,
 Pretty, Swift, Swimming, Water,
 Wood, Young
 0 Illegible
 0 Blank
 200 Total
 82 Different Responses

DUST

65 Dirty
 14 Dry
 11 Brown
 8 Filthy

DOG

10 Friendly
 7 Barking
 3 Cute, Lovable, Nice,
 Playful
 2 Black, Dirty, Frisky,
 Funny, Furry, Hairy, Mean
 0 Illegible
 0 Blank
 80 Total
 50 Different Responses

DUCK

17 White
 7 Yellow
 6 Waddling
 4 Feathery, Wild
 3 Downy, Wet
 2 Black, Flying, Noisy,
 Quacking, Soft, Ugly,
 Webbed
 0 Illegible
 0 Blank
 80 Total
 36 Different Responses

DUST

27 Dirty
 8 Brown
 3 Gray
 2 Cloudy, Dry, Dusty

TABLE E-1 Continued

Males (N=200)	Females (N=80)
DUST (cont.)	DUST (cont.)
6 Thick	2 Filthy, Fine, Light,
5 Irritating	Messy, Thick
4 Choking, Cloudy, Dirt	0 Illegible
3 Hot, Light, Messy, Musty	0 Blank
2 Annoying, Blowing, Bothersome,	80 Total
Choaking, Fine, Settled, Star,	37 Different Responses
Yellow	
1 Illegible	
0 Blank	
200 Total	
71 Different Responses	
GIN	GIN
20 Clear	8 Cotton, Strong
13 Alcoholic	6 Alcoholic, Clear
12 Cotton, Strong	5 Drunk
11 Dry	4 Bitter
10 Drunk, Good	3 Good, Intoxicating, Smelly
7 Bad, Bitter	2 Cold, Dry, Straight
5 Slow	0 Illegible
4 Cotten, Hot, Intoxicating,	0 Blank
Sloe, White	80 Total
3 Rummy, Tonic	40 Different Responses
2 Cheap, Drinking, Hard	
1 Illegible	
0 Blank	
200 Total	
80 Different Responses	
GOOSE	GOOSE
40 White	15 White
9 Silly	11 Silly
8 Mother	4 Golden, Noisy, Stupid
7 Cooked, Golden	3 Feathered, Funny
6 Feathery, Flying	2 Cute, Dumb, Loud
5 Fat, Funny	0 Illegible
4 Dumb, Graceful, Honking,	0 Blank
Noisy	80 Total
3 Big, Canadian, Clumsy, Large,	40 Different Responses
Long, Old, Squaking, Stupid	

TABLE E-1 Continued

Males (N=200)

Females (N=80)

GOOSE (cont.)

2 Awkward, Beautiful, Blue,
Duck, Fast, Gander, Loud,
Soft, Ugly, Wild
1 Illegible
0 Blank
200 Total
77 Different Responses

GOVERNOR

18 Powerful
10 Important
9 Good
8 State
7 Corrupt, Crooked
6 Bad, Political
5 Big
4 Honest, Old, Stately
3 Fat, Honorable, Just, Lieutenant,
Rich, Smart, Strong
2 Dignified, Dishonest, Distinguished,
Helpful, High, Kind, Politician,
Poor, Power, Responsible, Tall,
Young
1 Illegible
0 Blank
200 Total
97 Different Responses

GUN

33 Dangerous
13 Shot
12 Deadly, Loud
8 Black
7 Loaded
6 Powerful
5 Fast
4 Accurate, Clean, Heavy,
Short, Small
3 Cold, Hot

GOVERNOR

5 State
4 Corrupt, Elected,
Important, Powerful
3 Good
2 Big, Great, Handsome,
High, Honest, Honorable,
Political, Rich
0 Illegible
0 Blank
80 Total
54 Different Responses

GUN

15 Dangerous
5 Loaded
4 Black, Gray, Loud
3 Deadly, Long, Shot, Small
2 Bad, Fast, Fatal, Heavy,
Powerful
0 Illegible
0 Blank
80 Total
40 Different Responses

TABLE E-1 Continued

Males (N=200)

Females (N=80)

GUN (cont.)

2 Big, Destructive, Fine, Fired,
Good, Hard, Hunting, Long,
Metal, Noisy, Old, Rusty,
Shiny, Shy, Target, Useful
0 Illegible
1 Blank
200 Total
76 Different Responses

HONEY

150 Sweet
8 Golden, Sticky
5 Bee, Bees
3 Thick
2 Flowing, Good, Stickey,
Tasty, Yellow
0 Illegible
0 Blank
200 Total
22 Different Responses

HUT

61 Small
20 Grass
12 Thatched
11 Dirty
8 Little
5 Brown, Mud, Native, Shabby,
Straw, Thatch, Wooden
3 Tiny
2 Delapidated, Delapidated,
Indian, Lonely, Primitive,
Simple
0 Illegible
0 Blank
200 Total
57 Different Responses

HONEY

53 Sweet
9 Sticky
3 Thick
2 Golden, Good, Yellow
0 Illegible
0 Blank
80 Total
15 Different Responses

HUT

24 Small
9 Grass
6 Thatched
5 Straw
4 Wooden
3 Little
2 Cozy, Grassy, Poor,
Tiny, Wretched
0 Illegible
0 Blank
80 Total
30 Different Responses

TABLE E-1 Continued

Males (N=200)	Females (N=80)
<p>INK</p> <p>95 Black</p> <p>53 Blue</p> <p>7 Messy</p> <p>5 Dark</p> <p>4 Spilled</p> <p>3 India, Spotted, Write</p> <p>2 Permanent, Red, Stain, Staining, Wet</p> <p>0 Illegible</p> <p>0 Blank</p> <p>200 Total</p> <p>30 Different Responses</p>	<p>INK</p> <p>34 Black</p> <p>27 Blue</p> <p>3 Washable</p> <p>2 Permanent</p> <p>0 Illegible</p> <p>0 Blank</p> <p>80 Total</p> <p>18 Different Responses</p>
<p>JAIL</p> <p>25 Dirty</p> <p>21 Bad</p> <p>10 Barred, Small</p> <p>8 Cold</p> <p>7 Dark, Locked</p> <p>6 Dingy, Old</p> <p>5 City</p> <p>4 Confined, Cramped, Crowded</p> <p>3 Confining, County, Strong</p> <p>2 Bleak, Damp, Dreary, Evil, Good, Horrible, Quiet, Smelly, Striped</p> <p>2 Illegible</p> <p>1 Blank</p> <p>200 Total</p> <p>78 Different Responses</p>	<p>JAIL</p> <p>10 Dirty</p> <p>5 Cold</p> <p>4 County, Crowded, Dark, Locked, Small</p> <p>3 Bad</p> <p>2 Barred, City, Confining, Dingy, Old</p> <p>0 Illegible</p> <p>0 Blank</p> <p>80 Total</p> <p>45 Different Responses</p>
<p>KING</p> <p>23 Powerful</p> <p>19 Rich</p> <p>18 Royal</p> <p>9 Old, Regal</p> <p>8 Good</p> <p>7 Stately</p>	<p>KING</p> <p>11 Regal</p> <p>9 Powerful</p> <p>6 Rich</p> <p>5 Majestic</p> <p>3 Good, Royal, Ruling, Stately</p>

TABLE E-1 Continued

Males (N=200)

Females (N=80)

KING (cont.)

5 High, Wise
 3 Fat, Omnipotent, Pompous,
 Wealthy
 2 Aristocratic, Benevolent,
 Big, Gold, Great, Large,
 Leader, Majestic, Mighty,
 Power, Purple, Ruler, Ruling,
 Strong, Tyrannical
 0 Illegible
 0 Blank
 200 Total
 83 Different Responses

LION

30 Fierce
 21 Ferocious
 10 Yellow
 8 Mean, Strong
 7 Mangy, Roaring
 6 Hairy, Tawny
 5 Big, Large, Shaggy
 4 Dangerous, Sleepy, Tan
 3 Brave, Golden, Kingly,
 Loud, Sleeping
 2 Angry, Hungry, King, Lazy,
 Mighty, Orange, Savage, Sly,
 Wild
 0 Illegible
 0 Blank
 200 Total
 66 Different Responses

MOUSE

49 Small
 21 Gray
 13 Grey
 12 Brown, Quiet
 6 Quick, Tiny
 5 Dirty, Little, Squeaky

KING (cont.)

2 Fat, Kind, Mighty,
 Queen, Reigning
 0 Illegible
 0 Blank
 80 Total
 40 Different Responses

LION

15 Ferocious
 12 Fierce
 6 Brave
 5 Yellow
 4 Mean
 3 Hungry
 2 Angry, Dangerous, Loud,
 Mangy, Noble, Shaggy,
 Sleepy, Tame, Tawny
 0 Illegible
 0 Blank
 80 Total
 32 Different Responses

MOUSE

11 Small
 10 Gray
 7 Brown, Grey, Squeaky
 4 Cute, Tiny
 3 Little
 0 Illegible

TABLE E-1 Continued

Males (N=200)

Females (N=80)

MOUSE (cont.)

4 Fast
 3 Mighty, Squeaky, Ugly, White
 2 Cat, Field, Furry, Mickey
 Squeaking, Timid
 0 Illegible
 0 Blank
 200 Total
 59 Different Responses

OCEAN

48 Blue
 21 Deep
 16 Wide
 15 Salty
 12 Big
 11 Wet
 9 Vast
 8 Large
 4 Calm, Green, Huge, Rolling
 3 Tremendous
 2 Beautiful, Broad, Cold, Dark,
 Roaring, Rough, Sea
 0 Illegible
 0 Blank
 200 Total
 47 Different Responses

PEN

28 Blue
 20 Fountain
 18 Ink
 13 Black, Leaky
 9 Writing
 8 Messy
 7 Ball Point, Sharp
 6 Long
 5 Inky, Red
 4 Pencil
 3 Green, Small, Straight,
 Thin, Useful, Wet

MOUSE (cont.)

0 Blank
 80 Total
 35 Different Responses

OCEAN

25 Blue
 9 Wide
 4 Deep, Large
 3 Big, Huge, Rolling, Vast
 2 Atlantic, Endless, Green,
 Rough, Salty
 0 Illegible
 0 Blank
 80 Total
 29 Different Responses

PEN

13 Blue
 12 Leaky
 10 Ink
 9 Fountain
 7 Messy
 4 Writing
 3 Black, Long
 2 Ball Point, Dirty, Pointed
 0 Illegible
 0 Blank
 80 Total
 24 Different Responses

TABLE E-1 Continued

Males (N=200)	Females (N=80)
PEN (cont.)	
2 Ballpoint, Big, Pig, Pointed, Used	
0 Illegible	
0 Blank	
200 Total	
53 Different Responses	
PHYSICIAN	
25 Helpful	14 Helpful
24 Good	8 Good
17 Kind	6 Kindly
10 Healing	5 Kind, White
6 Medical, Smart	3 Nice, Sick, Smart
5 Doctor, Friendly	2 Dedicated, Gentle, Ill,
4 Trustworthy, White	Intelligent, Medical, Old
3 Clean, Dedicated, Gentle,	0 Illegible
Intelligent, Kindly, Nice, Sick	0 Blank
2 Benevolent, Capable, Family,	80 Total
Help, Quack, Resident, Rich,	35 Different Responses
Tired, Wealthy, Wise	
0 Illegible	
0 Blank	
200 Total	
80 Different Responses	
PRISON	
25 Dark	14 Dark
17 Bad	4 Bad
14 Dirty	3 Barred, Closed, Confining,
6 Dank	Dirty, Gloomy
5 Grey, State	2 Awful, Cold, Damp,
4 Cold, Confined, Damp,	Necessary, Sad, Ugly
Dingy, Gray, Old	0 Illegible
3 Closed, Evil, Gloomy,	0 Blank
Hard, Mean, Sad	80 Total
2 Big, Bleak, Criminal,	48 Different Responses
Dangerous, Dreary, Dull,	
Enclosed, Harsh, Locked,	
Lonely, Restrictive, Stone	
0 Illegible	
0 Blank	
200 Total	
92 Different Responses	

TABLE E-1 Continued

Males (N=200)

Females (N=80)

SEA

42 Blue
19 Calm
16 Salty
9 Deep, Rough
6 Big, Choppy, Green, Rolling
5 Angry
4 Beautiful, Stormy, Vast,
Wet, Wide
3 Cold
2 Huge, Peaceful, Restless, Surging,
Turbulent, Water, Wavy, Wild
0 Illegible
0 Blank
200 Total
61 Different Responses

SOAP

59 Clean
19 Slippery
16 White
7 Cleaning
6 Soft, Wet
5 Foamy, Sweet
4 Fragrant, Good, Sudsy
3 Bath, Cleansing, Smooth, Washing,
Yellow
2 Bubbly, Dirty, Lathery, Slick,
Slimy, Smelly, Sticky, Strong
0 Illegible
1 Blank
200 Total
57 Different Responses

SPIDER

45 Black
17 Ugly
11 Small
8 Poisonous
6 Crawling, Hairy
4 Creepy, Evil, Harmful

SEA

22 Blue
9 Green
6 Calm
4 Rolling, Rough
3 Beautiful, Foamy
2 Billowing, Roaring,
Turbulent, Wet
0 Illegible
0 Blank
80 Total
32 Different Responses

SOAP

30 Clean
7 Slippery, White
6 Sudsy
3 Cleaning, Dial
2 Cleansing, Face, Lathery
0 Illegible
0 Blank
80 Total
27 Different Responses

SPIDER

26 Black
8 Ugly
4 Crawling
3 Creepy
2 Busy, Frightening, Furry,
Hairy, Small, Tiny

TABLE E-1 Continued

Males (N=200)

Females (N=80)

SPIDER (cont.)

3 Bad, Crafty, Dangerous, Fast,
Weaving, Web
2 Big, Creeping, Dirty, Little,
Scary, Sly, Tiny
0 Illegible
0 Blank
200 Total
85 Different Responses

STEP

34 High
19 Steep
14 Big
12 First
8 Long
5 Down, Large
4 Broken
3 Ascending, Careful, Giant, Low,
Short, Stairs, Wooden
2 Hard, Lively, Square, Up
0 Illegible
0 Blank
200 Total
89 Different Responses

THIEF

29 Bad
17 Dishonest
12 Sly, Sneak
9 Sneaky
8 Evil
7 Clever
6 Stealthy
5 Black, Dark
4 Dangerous, Poor
3 Dirty, Quick, Smart, Stolen,
Stupid
2 Bearded, Cunning, Lowly, Mean,
Old, Running, Sneaky, Stealing

SPIDER (cont.)

0 Illegible
0 Blank
80 Total
37 Different Responses

STEP

22 High
10 Steep
6 Up
4 First, Long
2 Big, Concrete, Gray, Hasty
0 Illegible
0 Blank
80 Total
35 Different Responses

THIEF

11 Bad
7 Sneaky
4 Dishonest, Sly
3 Black, Poor, Ugly
2 Cruel, Dangerous, Jewel,
Scared, Stealthy, Wicked
0 Illegible
0 Blank
80 Total
46 Different Responses

TABLE E-1 Continued

Males (N=200)

Females (N=80)

THIEF (cont.)

0 Illegible
0 Blank
200 Total
76 Different Responses

TIGER

43 Striped
21 Fierce
12 Ferocious
9 Mean, Stripped, Vicious
6 Powerful
5 Dangerous, Growling, Yellow
4 Stripes, Strong, Wild
3 Bright, Orange, Paper
2 Angry, Fast, Killer, Man Eating,
Roaring, Tough
0 Illegible
0 Blank
200 Total
65 Different Responses

TRIGGER

25 Hair
12 Dangerous
11 Deadly, Happy, Quick
9 Gun
7 Black
5 Cold, Steel
4 Curved, Danger, Fast, Gold
3 Hard, Itchy, Metal, Tight
2 Brown, Lethal, Light, Pulled,
Rapid, Short, Silver, Small,
Soft, Touchy
0 Illegible
0 Blank
200 Total
83 Different Responses

TIGER

22 Striped
9 Fierce
8 Stripped
4 Ferocious, Yellow
3 Roaring
2 Handsome, Orange,
Snarling, Spotted
0 Illegible
0 Blank
80 Total
32 Different Responses

TRIGGER

7 Dangerous, Gun
6 Quick
4 Fast
3 Cold, Deadly, Happy,
Loud, Noisy
2 Bad, Black, Death, Hard,
Heavy, Large, Silver, Small
0 Illegible
1 Blank
80 Total
41 Different Responses

TABLE E-1 Continued

Males (N=200)	Females (N=80)
WATER	WATER
47 Wet	23 Wet
34 Cool	17 Clear
28 Clear	10 Cool
23 Cold	7 Blue
21 Blue	4 Cold
4 Hot, Refreshing	3 Deep
3 Thirsty	2 Calm, Smooth
2 Good, Pure, Smooth	0 Illegible
0 Illegible	0 Blank
0 Blank	80 Total
200 Total	20 Different Responses
41 Different Responses	
WIDOW	WIDOW
35 Old	20 Sad
24 Sad	17 Black
21 Black	14 Lonely
19 Lonely	9 Old
16 Poor	5 Alone
6 Sorrowful, Unhappy	3 Sorrowful
4 Clear	2 Open
3 Bereaved, Elderly, Grieving	0 Illegible
2 Alone, Dead, Grieved, Hurt,	0 Blank
Merry, Mourning, Open, Small,	80 Total
Unfortunate, Young	17 Different Responses
0 Illegible	
0 Blank	
200 Total	
61 Different Responses	

APPENDIX F
COMMON RESPONSES TO PAIRS FOR 20 PAIRS

Common Responses to Pairs

In order to provide some index of similarity between response hierarchies of the two members of a word-pair, a list of the common responses in the two hierarchies was prepared for several pairs. Table F-1 lists the responses common to the two hierarchies of 20 of the 120 word-pairs. The frequency values shown are the combined frequencies of the common response in the hierarchies for the stimulus and response members of the pair. The hierarchies from which the common responses have been drawn are the Free Association norms given in Appendix C. Only the hierarchies for male subjects (N=240) were used.

The 20 word-pairs are the 5 pairs for which the mean JM score was highest, the 5 for which mean JM was lowest, the 5 for which the mean forward DV score was highest and the 5 for which mean forward DV was lowest. The mean JM or DV score for each pair is given in parentheses after the pair.

Space and cost limitations prohibit a more complete listing of common responses. Additional hierarchies may be obtained by comparing hierarchies in the Free Association norms in the manner described above.

TABLE F-1
COMMON RESPONSES TO PAIRS

Joint Meaningfulness	Detection Value (forward)
<u>High Scores</u>	
OCEAN - SEA (JM: 8.16)	BEE - HONEY (DV: .88)
65 Water	34 Heat
55 Sea	6 Wasp
20 Fish	40 Total Responses
18 Blue	2 Different Responses
17 Ship	
16 Swim	
15 Salt	
14 Waves	
11 Wave	
9 Boat, Shore	
8 Beach, Deep	
7 Sand	
6 Surf	
5 Roar, Sail, Side	
4 Big, Breeze, Food, Saltwater	
3 Fun	
2 Air, Foam, Huge, Roll, Rough, Salty, Shell, Swimming, Tide	
330 Total Responses	
32 Different Responses	
	GUN - TRIGGER (DV: .88)
	69 Bullet
	43 Shoot
	29 Rifle
	18 Shot
	15 Pistol
	7 Bang
	181 Total Responses
	6 Different Responses
CAR - AUTOMOBILE (JM: 8.00)	DOCTOR - PHYSICIAN (DV: .82)
46 Drive	50 Nurse
17 Fast	24 Sick
12 Ride	23 Medicine
11 Truck	9 Heal
10 Tire	6 Doc
9 Speed	5 Cure, Father, Hospital, Illness, Pain
7 Go, Wheels	3 Patient, Shot
6 Chevy	2 Health, Hurt, M.D., Stethoscope, Surgeon
5 Ford, New, Run	153 Total Responses
4 Buick, Gas, Transportation, Wreck	17 Different Responses
3 Blue, Fun, Gasoline, Tires	
2 Color, Convertible, Corvair, Corvett, Driving, GTO, Old	
182 Total Responses	
27 Different Responses	

TABLE F-1 Continued

Joint Meaningfulness

Detection Value

JAIL - PRISON (JM: 7.70)

80 Bars
45 Cell
26 House
15 Bad
14 Prisoner
12 Convict
10 Police
8 Crime
7 Bar, Break, Criminal
6 Confinement, Punishment
5 Sentence
4 Confine, Law
3 Captive, Home, Pen, Punish
2 Cage, Cop, Held, Hell, Sell
278 Total Responses
25 Different Responses

GOOSE - DUCK (JM: 7.64)

67 Water
32 Feathers
29 Bird
27 Gander
25 Feather, Geese
11 Egg
10 Quack
9 Chicken
7 White
6 Animal, Hunt
5 Shoot
4 Bill, Eat, Food, Waddle
3 Dinner, Fowl
2 Tail
283 Total Responses
20 Different Responses

PEN - INK (DV: .82)

66 Write
51 Ink
9 Paper
8 Blue
2 Author
136 Total Responses
5 Different Responses

DOG - CAT (DV: .79)

10 Pet
7 Animal
5 Fur
3 Girl
2 Brown, Rat, Small
31 Total Responses
7 Different Responses

TABLE F-1 Continued

Joint Meaningfulness	Detection Value
LION - TIGER (JM: 7.60)	
31 Cat	
20 Jungle	
17 Animal, Roar	
10 Fierce	
7 Hunt, Tail	
6 Growl, Mean	
5 Yellow	
4 Africa, Beast, Danger, Leopard, Zoo	
3 Big, Kill, Large, Paw	
158 Total Responses	
19 Different Responses	
<u>Low Scores</u>	
SPIDER - WIDOW (JM: 3.92)	
101 Wed	
32 Black	
133 Total Responses	
2 Different Responses	
STEP - BROTHER (JM: 3.87)	
166 Sister	
6 Mother	
2 Father	
174 Total Responses	
3 Different Responses	
DUST - BOWL (JM: 3.58)	
5 Water	
3 Football	
8 Total Responses	
2 Different Responses	
CASTLE - HUT (DV: .00)	
74 House	
13 Home	
4 Island	
3 Room	
2 Cold	
96 Total Responses	
5 Different Responses	
SOAP - WATER (DV: .00)	
52 Wash	
38 Clean	
15 Bath	
105 Total Responses	
3 Different Responses	

TABLE F-1 Continued

Joint Meaningfulness	Detection Value
CHEESE - MOUSE (JM: 3.57)	BANDIT - THIEF (DV: .00)
70 Rat	84 Steal
23 Mice	64 Robber
18 Mouse	39 Crook
10 Hole	27 Rob
8 Small	14 Bad, Mask
4 Cheese	8 Catch
133 Total Responses	6 Money
6 Different Responses	5 Cop, Jail
	4 Crime, Criminal
	3 Police
ASH - GIN (JM: 2.58)	2 Law
No Common Items	279 Total Responses
	14 Different Responses
	BANKER - BEGGAR (DV: .00)
	192 Money
	12 Man
	9 Rich
	2 \$
	215 Total Responses...
	4 Different Responses

APPENDIX G

DETECTION VALUE: RESPONSE HIERARCHIES FOR 240 WORDS

Detection Value

The norms for Detection Value (DV) were gathered from incoming freshmen during orientation week at Vanderbilt University in September, 1963. The 120 word-pairs were administered both forward and backward. In the forward form the right-hand member of the pair was presented with instructions to guess which word would elicit this response. In the backward form the left-hand member was presented and the same instructions given. The subject was given three blanks and a 30 second time period in which to make three guesses. The task was arranged so that no subject was asked to respond to a given word-pair in both the forward and backward forms.

The stimulus and response members of the 120 pairs were each divided into three groups for a total of six sets of 40 words. The words were listed in two columns in mimeographed booklets and each word was preceded by a horizontal line on which the subject was to write his guess. The booklets also contained material for the Joint Meaningfulness task. The order and arrangement of words was counterbalanced so that no subject received the same word in both tasks. Each of the six booklets was presented to 142 subjects. Of the total of 852 subjects, 592 were males and 260 were females. The ratio of males to females was similar in each group.

The statement printed on the front of the booklets contained the following instructions:

"The purpose of this test is to determine how well you can judge other people's associations to words. On the following pages are 40 words, each of which is preceded by a blank space. Each word was given by students as an association to the word that belongs in the blank space. Your task is to guess which word goes in the blank space. Because this is a difficult task, you will be given three guesses for each missing word.

The words you will see were obtained by giving an association test to hundreds of students. In the test students were presented with a list of words, one at a time, and asked to give the first association that came to mind for each. For example, to the word table, 84 per cent of the students gave the association of chair, 4 per cent gave the association of food, and 2 per cent gave the association of desk. Your task is to work backwards from such associations to the original words. For example, an item that could be formed from the above association is as follows:

_____ food
_____ food
_____ food

One student for his first guess wrote steak in the first blank space, which was not the word that obtained food in previous studies

Table G-1

Detection Value Response Hierarchies

ALLIGATOR (017)

26 Crocodile
19 Crocidile
14 Reptile, Swamp
11 Animal
6 Crocadile
5 Shoes
4 Crockadile, Shoe, Teeth
3 Lake, Snake
2 Bag, Crockodile, Skin
0 Illegible
1 Blank
142 Total
37 Different Responses

ANTLERS (093)

94 Deer
19 Horns
11 Moose
10 Reindeer
2 Buck, Raindeer
0 Illegible
0 Blank
142 Total
10 Different Responses

APE (042)

85 Monkey
12 Gorilla
11 Man
7 Animal
6 Jungle
3 Evolution
2 Banana, Hairy, Tree, Trees,
Zoo
0 Illegible
0 Blank
142 Total
19 Different Responses

APPLE (100)

39 Fruit
29 Tree
16 Pie
12 Orange
6 Cider, Teacher
5 Core, Pear
4 Food
3 Orchard, Red
2 Eve, Peach, Sauce
0 Illegible
0 Blank
142 Total
22 Different Responses

ASH (113)

43 Fire
34 Cigarette
23 Tray
5 Can
4 Burn, Cinder, Tree
2 Cigar, Cigarette, Smoke,
Wood
0 Illegible
0 Blank
142 Total
28 Different Responses

ATHLETE (029)

33 Football
29 Sports
16 Sport
8 Game
7 Player
4 Muscle
3 Man, Star
2 Athletics, Ball, College,
Contest, Games, Runner,
Strength, Strong
0 Illegible
0 Blank
142 Total
39 Different Responses

Table G-1 Continued

AUTOMOBILE (036)

100 Car
 3 Highway, Road, Travel
 2 Accident, Engine, Garage,
 Gas, Street, Tire, Tires,
 Transportation, Vehicle
 0 Illegible
 0 Blank
 142 Total
 28 Different Responses

AX (019)

27 Wood
 26 Hatchet
 21 Tree
 9 Hammer
 7 Handle
 6 Chop
 5 Pick
 3 Cut, Head, Knife, Lumberjack
 2 Blade, Hachet, Lumber, Saw,
 Steel, Timber, Woods
 0 Illegible
 0 Blank
 142 Total
 33 Different Responses

BABY (032)

25 Child
 23 Infant
 22 Mother
 12 Bottle
 8 Crib
 6 Crying
 5 Birth, Cry
 4 Diaper
 2 Bed, Blanket, Diapers, Infant,
 Rattle, Toys, Youth
 0 Illegible
 0 Blank
 142 Total
 34 Different Responses

BACON (083)

86 Eggs
 10 Pig, Pork
 8 Breakfast
 6 Egg, Hog
 5 Ham
 3 Food
 0 Illegible
 0 Blank
 142 Total
 16 Different Responses

BALL (007)

53 Bat
 28 Game
 8 Basket
 6 Sphere
 4 Sport
 3 Baseball, Bounce, Fun,
 Rubber, Sports, Toy
 2 Dance, Field, Football,
 Play, Roundness
 0 Illegible
 1 Blank
 142 Total
 30 Different Responses

BANDIT (104)

52 Robber
 32 Thief
 17 Crook
 8 Outlaw
 6 Robbery
 4 Gun
 3 Mask
 2 Bank, Cowboy, Criminal
 0 Illegible
 0 Blank
 142 Total
 24 Different Responses

Table G-1 Continued

BANKER (001)

72 Money
36 Bank
11 Teller
2 Executive, Rich
0 Illegible
1 Blank
142 Total
23 Different Responses

BARN (058)

36 Farm
17 Cow
13 Hay
11 Animals, Cows
9 Horse
4 Cattle, Storehouse
3 Hayloft, Horses, Livestock, Red
2 Animal, Chicken, Country, Loft,
Stable, Stall
0 Illegible
0 Blank
142 Total
31 Different Responses

BED (041)

67 Sleep
16 Pillow
11 Blanket, Sheet
6 Bedroom
5 Chair, Room
4 Table
3 Cover
2 Furniture, Mattress, Night,
Sheets, Spread
0 Illegible
0 Blank
142 Total
18 Different Responses

BEE (011)

68 Honey
20 Sting
13 Insect
10 Bird
8 Hive
5 Flower
4 Birds
2 Buzz, Queen, Wasp
1 Illegible
0 Blank
142 Total
17 Different Responses

BEGGAR (001)

22 Money
18 Man
13 Thief
12 Pauper, Tramp
11 Bum
10 Poor
7 Hobo
4 Alms, Rags
3 Cripple, Poverty
2 Charity, Cup
0 Illegible
1 Blank
142 Total
32 Different Responses

BIRD (033)

13 Robin
12 Nest
10 Fly, Song
9 Feather, Tree
7 Flight, Fowl
6 Bee
5 Eagle, Wing
4 Animal, Canary
3 Cage, Wings
2 Feathers, Flying, Plane,
Sparrow
0 Illegible
2 Blank
142 Total
44 Different Responses

Table G-1 Continued

BOAT (003)

56 Water
25 Ship
16 Sail
8 Motor
6 Lake
5 Ocean
4 Sea
2 River, Row, Sailing
0 Illegible
2 Blank
142 Total
24 Different Responses

BOOK (057)

17 School
11 Novel, Page
9 Read
8 Pages, Reading, Study
6 Text
5 Library, Story
4 Author, Cover, Knowledge
Literature
3 Education, Learning
2 Desk, Fiction, Paper, Reader,
Shelf, Store
0 Illegible
1 Blank
142 Total
41 Different Responses

BOTTLE (032)

24 Glass
16 Beer
14 Milk
12 Baby
8 Cap, Container
7 Jar, Whiskey
6 Liquid
5 Drink
4 Coke, Pop, Top
3 Can, Liquor, Soda
2 Cork, Opener, Wine
0 Illegible
1 Blank
142 Total
26 Different Responses

BOW (067)

64 Arrow
34 Ribbon
10 Tie
4 Ship
3 Bend, Curtsey, Stern
2 Archer, Boat, Curtsy, Hair
0 Illegible
0 Blank
142 Total
24 Different Responses

BOWL (089)

18 Dish
15 Cereal
13 Fruit, Soup
10 Spoon
9 Salad
8 Cup
5 Food, Plate, Sugar
4 Game
3 Finger, Saucer
2 Ball, Pan, Strike, Toilet
1 Illegible
1 Blank
142 Total
38 Different Responses

BOY (034)

102 Girl
8 Man
7 Male
3 Child, Son
2 Adolescence, Kid, Scout
0 Illegible
1 Blank
142 Total
20 Different Responses

Table G-1 Continued

BRICK (120)

46 House
20 Stone
18 Building
12 Wall
8 Mason
4 Clay, Layer
3 Cement, Mortar, Red, Straw
2 Bat, Chimney, Kiln
0 Illegible
0 Blank
142 Total
26 Different Responses

BRIDGE (044)

72 River
16 Water
12 Cards
6 Draw
4 Construction
3 Car, Road, Table
2 Contract, Teeth
0 Illegible
1 Blank
142 Total
28 Different Responses

BROTHER (112)

123 Sister
5 Boy
3 Family
2 Friend, Mother
0 Illegible
0 Blank
142 Total
12 Different Responses

BRUSH (060)

70 Hair
25 Comb
9 Paint
8 Tooth
6 Clothes
3 Teeth
2 Fire, Shoe
0 Illegible
0 Blank
142 Total
25 Different Responses

BUG (055)

94 Insect
6 Ant, Spider
4 Beetle, Roach
3 Fly
2 Bed, Pest
0 Illegible
0 Blank
142 Total
29 Different Responses

BULLET (024)

111 Gun
6 Rifle
5 Pistol
3 Shot, Speed
2 Death, Hole, Lead, Shell,
Wound
0 Illegible
0 Blank
142 Total
14 Different Responses

BUTTER (030)

118 Bread
5 Margarine
4 Cream
3 Margarine
3 Milk
0 Illegible
0 Blank
142 Total
14 Different Responses

BUTTERFLY (070)

47 Insect
24 Moth
8 Caterpillar, Net
7 Cocoon
5 Wing, Wings
4 Beauty, Bug, Flower
3 Collection, Color
2 Caterpillar, Flowers
0 Illegible
0 Blank
142 Total
30 Different Responses

Table G-1 Continued

BUTTON (095)

51 Shirt
18 Hole
15 Coat
6 Bow
5 Snap, Zipper
4 Blouse, Dress, Hook
3 Buttonhole, Sew
2 Bows, Fastener, Thread
0 Illegible
0 Blank
142 Total
32 Different Responses

CAN (066)

54 Tin
20 Food
14 Container
9 Opener, Trash
8 Garbage
6 Beer
4 Beans
2 Soup, Waste
0 Illegible
0 Blank
142 Total
24 Different Responses

CAR (036)

45 Automobile
11 Engine
9 Motor
7 Auto, Transportation
6 Road, Speed
5 Garage
4 Bus, Driver, Gas, Gasoline
2 Automobile, Race, Truck
0 Illegible
0 Blank
142 Total
39 Different Responses

CARPET (009)

82 Rug
43 Floor
2 Wool
0 Illegible
2 Blank
142 Total
16 Different Responses

CASTLE (107)

38 King
15 Palace
13 Knight
9 Moat
8 Mansion
7 Fort
5 Prince
4 Fortress
3 Home, House, Knights
Rock, Wall
2 Giant, Sand
0 Illegible
0 Blank
142 Total
39 Different Responses

CAT (091)

112 Dog
10 Mouse
6 Animal
3 Alley
2 Feline
1 Illegible
0 Blank
142 Total
13 Different Responses

CEILING (076)

39 Floor
31 Roof
18 Room, Wall
10 Top
3 Light, Walls
2 Head, High, House, Plaster,
Sky
0 Illegible
0 Blank
142 Total
22 Different Responses

Table G-1 Continued

CHEESE (105)

42 Mouse
30 Milk
7 Crackers
6 Butter, Cake, Food, Swiss
5 Rat
4 Cream
3 Bread, Cow, Ham
2 Goat, Mice, Mold, Smell
0 Illegible
0 Blank
142 Total
29 Different Responses

CHILD (006)

28 Mother
19 Baby
14 Parent
12 Adult
8 Boy
6 Kid
5 Infant, Youth
4 Parents
3 Children, Toys, Young
2 Family, Girl, Man, Play, School,
Toy, Youngster
0 Illegible
1 Blank
142 Total
36 Different Responses

CHURCH (118)

37 God
17 Religion
16 Sunday
15 Steeple
9 Worship
6 Minister
5 Preacher
4 School
3 Temple
2 Altar, Building, Chapel, Christ,
Christian
0 Illegible
0 Blank
142 Total
34 Different Responses

CITIZEN (068)

22 Person
19 Country
9 Resident
8 Member
7 Nation, Voter
6 American, Community, Patriot
5 United States
4 Man, Town
3 Inhabitant
2 America, City, Countryman,
Duty, Government, Individual,
Native, Neighbor, People,
State
0 Illegible
1 Blank
142 Total
38 Different Responses

CITY (081)

81 Town
21 State
6 People
3 Buildings, Nashville, New
York
2 Building, Bus, Chicago,
Metropolis, Skyscraper, Street
0 Illegible
0 Blank
142 Total
25 Different Responses

CLAW (092)

26 Cat
13 Scratch
11 Bear
10 Bird, Paw
8 Eagle, Talon
5 Tiger
4 Crab, Fang, Foot, Nail
3 Fingernail, Hand
2 Animal, Beak, Hammer, Hook,
Lion, Lobster
0 Illegible
0 Blank
142 Total
37 Different Responses

Table G-1 Continued

CLAY (120)

24 Mud
23 Dirt
18 Pottery
7 Earth, Mold
5 Brick, Model
4 Ground, Red
3 Pigeon, Rock, Sand, Soil, Statue
2 Court, Potter, Sculpture
1 Illegible
0 Blank
142 Total
40 Different Responses

CLOCK (038)

104 Time
13 Watch
10 Alarm
5 Tick
2 Hand, Hands
0 Illegible
0 Blank
142 Total
12 Different Responses

CLOSET (053)

81 Clothes
13 Storage
12 Clothing
6 Room
5 Door
3 Cloths, Hanger, Wardrobe
2 Bedroom, Broom, Hangars, Hangers
0 Illegible
0 Blank
142 Total
20 Different Responses

CLOTHING (050)

26 Shirt
20 Dress
10 Apparel, Suit
7 Pants
6 Coat
5 Closet, Garment
4 Dresses, Warmth
3 Food, Store, Wardrobe
Winter
2 Apparel, Clothes, Shelter
0 Illegible
0 Blank
142 Total
44 Different Responses

COAT (035)

31 Hat
14 Jacket
13 Tie
12 Winter
10 Warmth
6 Fur
5 Sweater
4 Clothes
3 Cloak, Hanger, Pants, Rain, Suit, Weather, Wool, Wrap
2 Clothing, Dress, Warm
0 Illegible
1 Blank
142 Total
35 Different Responses

COFFEE (018)

47 Tea
18 Cream
14 Cup
13 Pot
8 Sugar
5 Black
4 Drink, Milk
3 Brazil, Breakfast
2 Bean, Break, Caffeine, Toast
0 Illegible
0 Blank
142 Total
29 Different Responses

Table G-1 Continued

CORN (114)

42 Cob
12 Food, Stalk
8 Field
6 Ear
5 Crop, Flakes, Husk
4 Wheat
3 Cereal, Maize, Vegetable
2 Belt, Bread, Cotton, Grain,
Kernal, Meal, Whiskey
0 Illegible
1 Blank
142 Total
38 Different Responses

COURT (119)

33 Judge
23 Law
21 Justice
17 Tennis
11 Trial
6 Lawyer
4 King, Patio
3 Jury
2 Basketball, Room, Yard
0 Illegible
0 Blank
142 Total
26 Different Responses

CROCODILE (017)

84 Alligator
9 Swamp
8 Aligator
6 Reptile
5 Animal, Water
4 Tear
3 Teeth
2 Allegator, Danger, River, Tears
0 Illegible
1 Blank
142 Total
21 Different Responses

CROWD (048)

63 People
40 Mob
12 Group
4 Mass, Riot
3 Throng
2 Friends
0 Illegible
0 Blank
142 Total
21 Different Responses

CURRENCY (045)

116 Money
5 Dollar
4 Bank
3 Cash
2 Coin, Coins
0 Illegible
0 Blank
142 Total
16 Different Responses

DAGGER (031)

85 Knife
19 Cloak
11 Sword
6 Murder
3 Dirk
2 Thief
0 Illegible
0 Blank
142 Total
22 Different Responses

DAWN (061)

46 Morning
31 Sunrise
27 Sun
6 Light
5 Dusk
4 Day
2 Daybreak, Daylight, Horizon,
Sun-rise, Sunlight, Sunset
0 Illegible
0 Blank
142 Total
23 Different Responses

Table G-1 Continued

DEER (093)

32 Doe
19 Animal
15 Forest
11 Hunting
10 Antlers
7 Fawn, Hunter
5 Buck
4 Antler, Hunt
3 Antelope, Venison
2 Moose, Woods
0 Illegible
0 Blank
142 Total
32 Different Responses

DEVIL (111)

59 Hell
20 Angel
13 Satan
12 Evil
6 Demon
4 Fire, Horns, Sin
3 God
2 Bad, Pitchfork
0 Illegible
0 Blank
142 Total
24 Different Responses

DIAMOND (098)

65 Ring
21 Jewel
13 Gem
7 Stone
5 Carbon, Coal
2 Baseball, Engagement, Money, Ruby
0 Illegible
1 Blank
142 Total
27 Different Responses

DOCTOR (028)

32 Nurse
26 Medicine
11 Lawyer
10 Patient
8 Hospital, Sickness
7 Illness
6 Dentist
4 Physician
2 Disease, Man, Operation
0 Illegible
0 Blank
142 Total
36 Different Responses

DOG (091)

93 Cat
11 Pet
7 Animal
5 Puppy
3 Bark, Canine
2 Collar, Collie, Companion
0 Illegible
0 Blank
142 Total
23 Different Responses

DREAM (102)

65 Sleep
28 Nightmare
20 Day
6 Vision
5 Night
2 Fantasy, Illusion
0 Illegible
1 Blank
142 Total
20 Different Responses

Table G-1 Continued

DUCK (094)

29 Water
12 Bird
10 Goose, Hunting
9 Quack
6 Hunter, Mallard
5 Geese, Pond
4 Bill, Fowl, Lake
2 Chicken, Donald, Down,
Feathers, Flight, Gun, Waddle
0 Illegible
1 Blank
142 Total
42 Different Responses

DUST (089)

96 Dirt
4 Cloth, Desert
3 Broom
2 Ashes, Lint, Rag, Sand, Speck,
Storm
0 Illegible
0 Blank
142 Total
33 Different Responses

EAGLE (033)

67 Bird
10 Hawk
5 America, Bald
4 Symbol
3 Dollar, Emblem, Flight, Fly,
Nation
2 Eye, Flying, Freedom, Mountain,
Nest, Scout, Sky, Vulture, Wings
0 Illegible
0 Blank
142 Total
37 Different Responses

EGG (115)

58 Bacon
39 Chicken
12 Breakfast
9 Hen
7 Ham
4 Yoke, Yolk
1 Illegible
0 Blank
142 Total
15 Different Responses

EMBLEM (073)

27 Insignia
15 Symbol
13 Crest
10 Flag
9 Ensignia, Seal
8 Sign
5 Badge
3 School
2 Design, Eagle, Loyalty,
Medal, Organization, Patch,
Pin, Standard, Sticker
1 Illegible
1 Blank
142 Total
41 Different Responses

ENEMY (071)

34 Friend
23 War
17 Foe
10 Russia
7 Opponent
4 Fight, Hate
3 Army, Communist, Gun,
Hostility
2 Battle, Hatred, Russians,
Soldier, Adversary
0 Illegible
1 Blank
142 Total
36 Different Responses

ENGINE (010)

31 Motor
29 Car
15 Fire
14 Train
13 Steam
11 Automobile
8 Power
6 Machine
2 Combustion, Gasoline,
Locomotive
0 Illegible
0 Blank
142 Total
20 Different Responses

Table G-1 Continued

ENVELOPE (069)

106 Letter
14 Stamp.
4 Mail
3 Paper, Stationary, Stationery
0 Illegible
0 Blank
142 Total
15 Different Responses

FARM (058)

32 Animals
12 Animal
11 Cow
10 Barn, Crops
8 Country
7 Cows, Farmer
5 Tractor
4 Cattle
3 Agriculture, Field, Produce, Ranch
2 Fields, Food, Horses, Land, Plow, Rural
0 Illegible
0 Blank
142 Total
32 Different Responses

FIELD (114)

38 Meadow
24 Football
15 Pasture
7 Grass
5 Corn
4 Cotton, Farm, Plain
3 Cattle, Cows, Plow, Stream, Wheat
2 Athletic, Baseball, Crop, Hay, Track
0 Illegible
0 Blank
142 Total
34 Different Responses

FIG (099)

51 Tree
23 Fruit
22 Leaf
10 Date
9 Newton
3 Cookie, Food
2 Bar, Olive, Plum, Prune
0 Illegible
2 Blank
142 Total
22 Different Responses

FINGER (086)

85 Hand
19 Thumb
11 Ring
10 Toe
3 Digit, Nail
2 Index
0 Illegible
0 Blank
142 Total
16 Different Responses

FISH (040)

39 Water
9 Sea
8 Swim
7 Food
5 Bait, Lake, Ocean
4 Fisherman, Pole, Trout
3 Boat, Hunt, Pond, Swimming
2 Fishing, Fowl, Friday, Hook, Minnow, River, Tackle, Worm
0 Illegible
0 Blank
142 Total
46 Different Responses

FOOL (023)

49 Idiot
11 Jester
9 Clown
5 Man, Stupid, Trick
3 April, Loafer, Stupidity
2 Angel, Crazy, Gold, Imbecile, Joker, Laughter, Madman, Moron, Nut, People, Tease

Table G-1 Continued

0 Illegible
2 Blank
142 Total
45 Different Responses

FOOT (014)

41 Shoe
23 Hand
22 Toe
10 Head, Leg
5 Toes
4 Sock, Walk
3 Ankle
2 Ball, Football, Inch, Yard
0 Illegible
0 Blank
142 Total
25 Different Responses

FRIEND (071)

32 Enemy
20 Companion
13 Girl
12 Buddy, Pal
8 Boy
5 Comrade, Person
3 Help, Trust
2 Acquaintance, Comrad
0 Illegible
1 Blank
142 Total
36 Different Responses

FROST (072)

34 Cold
28 Winter
22 Snow
10 Dew, Fall
9 Ice
6 Morning
4 Autumn, Freeze
2 Bite, Jack
0 Illegible
1 Blank
142 Total
21 Different Responses

FRUIT (027)

46 Apple
20 Orange
18 Vegetable
9 Tree
6 Citrus
4 Banana
3 Food, Salad
2 Apples, Basket, Orchard,
Pear
0 Illegible
0 Blank
142 Total
37 Different Responses

GARBAGE (066)

42 Trash
25 Can
18 Waste
5 Refuse, Trash Can
3 Disposal, Dump, Filth,
Flies, Pail, Rubbish,
Truck
2 Collector, Dirt, Food,
Man, Odor, Smell
0 Illegible
0 Blank
142 Total
32 Different Responses

GENIUS (103)

39 Brain
10 Smart
9 Intelligence
8 Idiot, Intellect
7 Intellectual
5 Intelligent, Prodigy,
Scientist
4 Inventor
3 Einstein, Man, Moron
2 Brilliance, Einstien,
Mind, Studies, Wizard
0 Illegible
0 Blank
142 Total
41 Different Responses

Table G-1 Continued

GERM (052)

61 Disease
27 Bacteria
7 Virus
6 Cold, Sickness
4 Infection
3 Illness
2 Bug, Medicine, Microscope,
Wheat
0 Illegible
0 Blank
142 Total
31 Different Responses

GIANT (096)

22 Midget
17 Monster
16 Dwarf
12 Man
8 Goliath
4 Jack
3 David, Large, Size
2 Beanstalk, Beast, Cyclops,
Elephant, Fairy Tale,
Football, Huge, King, Pigmy,
Tall, Texas, Tree
0 Illegible
1 Blank
142 Total
50 Different Responses

GIN (113)

34 Cotton
16 Tonic
13 Liquor
11 Alcohol
10 Drink, Whiskey
6 Cards, Rummy
4 Rum, Vodka
2 Beverage, Booze, Bottle,
Drunk, Squirt, Whiskey
1 Illegible
0 Blank
142 Total
31 Different Responses

GIRL (080)

81 Boy
13 Female
11 Friend
7 Dress, Woman
4 Beauty, Sex
3 Love
0 Illegible
0 Blank
142 Total
20 Different Responses

GLOVE (077)

106 Hand
6 Baseball, Hat
3 Hands, Mitten
2 Leather, Winter
0 Illegible
0 Blank
142 Total
21 Different Responses

GOD (111)

21 Heaven
20 Religion
13 Christ
11 Jesus
10 Love
8 Lord
6 Man
5 Church, Father
4 Bible, Creator, Deity
3 Belief
2 Almighty, Being, Devil,
Life, Savior, Supreme,
0 Illegible
0 Blank
142 Total
35 Different Responses

GOLF (007)

34 Club
19 Ball
14 Sport
10 Game
9 Clubs, Tee
8 Course

Table G-1 Continued

3 Fairway, Green, Tennis
2 Bag, Greens, Leisure, Recreation
Tournament
1 Illegible
1 Blank
142 Total
33 Different Response

GOOSE (094)

44 Duck
43 Gander
8 Bird
6 Feathers, Geese
4 Feather
3 Animal
2 Ducks, Farm, Goslin,
Gosling, Hen
0 Illegible
1 Blank
142 Total
29 Different Responses

GOVERNOR (075)

73 State
6 Leader, Politics
5 Politician, Ruler
4 Executive, Government, Mansion,
Senator
3 Election, Wallace
2 Capitol, Clement, Mayor,
President
0 Illegible
0 Blank
142 Total
32 Different Responses

GRAPE (087)

42 Wine
28 Fruit
18 Vine
14 Juice
11 Raisin
2 Berry, Bunch, Food, Jelly,
Orange, Purple, Raisan, Seeds
0 Illegible
1 Blank
142 Total
25 Different Responses

GUN (024)

32 Rifle
28 Bullet
21 Pistol
10 Shot
7 Weapon
4 Barrel, Hunter
3 Hunt, Hunting, Revolver,
Shoot
2 Bullets, Death, Powder,
Target
0 Illegible
0 Blank
142 Total
31 Different Responses

GUN (117)

33 Rifle
20 Bullet
14 Shot
13 Pistol
11 Weapon
7 Shoot
4 Firearm, Hunt
3 Death, Powder
2 Bullets, Crook, Hunting,
Murder, Trigger, War
0 Illegible
0 Blank
142 Total
34 Different Responses

HAMMER (025)

107 Nail
7 Saw
5 Nails
4 Tool
2 Anvil, Ax, Carpenter, Pound,
Sickle, Steel
0 Illegible
0 Blank
142 Total
17 Different Responses

Table G-1 Continued

HAND (086)

40 Finger
30 Arm, Fingers
19 Foot
4 Glove
2 Face, Palm
0 Illegible
0 Blank
142 Total
22 Different Responses

HARBOR (090)

38 Ship
20 Port
19 Boat
16 Bay
7 Ships, Water
5 Boats
4 Sea, Wharf
3 Inlet
2 Lights, Ocean
0 Illegible
0 Blank
142 Total
27 Different Responses

HAT (035)

63 Head
41 Coat
6 Cap
3 Gloves, Rack
2 Straw
0 Illegible
0 Blank
142 Total
30 Different Responses

HATCHETT (019)

66 Ax
23 Axe
19 Tree
7 Knife
4 Indian
3 Hammer, Tool, Wood
2 Saw, Weapon
0 Illegible
1 Blank
142 Total
19 Different Responses

HEAD (002)

28 Hair
27 Body
15 Face
8 Brain, Hat
7 Top
6 Neck
5 Shoulders
4 Eye, Foot, Nose
3 Feet
2 Chief, Leader
0 Illegible
1 Blank
142 Total
32 Different Responses

HILL (084)

72 Mountain
13 Valley
7 Dale
3 Mound
4 Rise, Slope
3 Cliff, Country, High, Top
2 Knoll, Mountains
0 Illegible
1 Blank
142 Total
32 Different Responses

HONEY (011)

99 Bee
26 Bees
4 Comb
3 Bear
2 Sweet
0 Illegible
0 Blank
142 Total
13 Different Responses

HOURL (097)

73 Minute
34 Time
10 Clock
8 Minutes
7 Day
2 Glass, Lunch, One, Second
0 Illegible
0 Blank
142 Total
11 Different Responses

Table G-1 Continued

HUT (107)

20 Shack
19 House
17 Grass
10 Native
8 Island
7 Hovel
5 Natives, Village
4 Cabin
3 Abode, Adobe, Cottage,
Jungle, Straw, Thatch
2 Dwelling, Home, Mud,
Shelter, Tree
0 Illegible
0 Blank
142 Total
39 Different Responses

INK (008)

118 Pen
3 Spot, Well
2 India, Letter, Write
0 Illegible
0 Blank
142 Total
10 Different Responses

INSECT (055)

53 Bug
22 Fly
12 Ant
6 Mosquito, Pest
5 Bite
4 Animal, Bee
3 Spider
2 Beetle, Bugs, Butterfly
0 Illegible
0 Blank
142 Total
33 Different Responses

INVALID (029)

32 Cripple
10 Wheel Chair
8 Wheelchair
7 Patient, Sickness
6 Bed, Illness
5 Sick, Void
4 Doctor, Shut-in
3 Cripple, Hospital, Paralysis
2 Crippled, Handicap, Ticket,
Untrue
0 Illegible
1 Blank
142 Total
48 Different Responses

JAIL (079)

44 Prison
17 Bars
14 Criminal
12 Prisoner
9 Cell
7 Crime
5 Convict
4 Law, Police
3 Crook, House
2 Penitentiary, Sentence
1 Illegible
0 Blank
142 Total
28 Different Responses

JEWEL (098)

69 Diamond
15 Gem
10 Ring
6 Watch
5 Crown, Ruby
4 Stone
3 Box
2 Luxury, Pearl, Peral, Thief
0 Illegible
0 Blank
142 Total
29 Different Responses

Table G-1 Continued

JUSTICE (085)	KNIFE (051)
65 Law	32 Fork
19 Judge	20 Blade
15 Court	17 Cut
12 Peace	7 Gun
6 Freedom	6 Weapon
3 Right, Truth	4 Cutter, Wound
2 Courts, Crime, Equality, Fairness, Lawyer	3 Meat
0 Illegible	2 Butcher, Kitchen, Pocket, Sheath, Spoon, Stabbing, Steak, Steel
0 Blank	0 Illegible
142 Total	0 Blank
21 Different Responses	142 Total
KID (006)	49 Different Responses
65 Child	LABEL (073)
49 Goat	27 Can
10 Boy	18 Tag
2 Brother, Sheep, Youngster, Youth	16 Name
0 Illegible	15 Bottle
0 Blank	8 Jar
142 Total	6 Clothes, Package
17 Different Responses	3 Coat, Food
KING (075)	2 Advertisement, Brand, Sign, Stemp, Title
87 Queen	0 Illegible
14 Ruler	0 Blank
9 Crown	142 Total
6 Monarch	44 Different Responses
5 Kingdom	LAKE (003)
3 Leader, Royalty	65 Water
2 Throne	17 Boat, River
0 Illegible	13 Pond
0 Blank	5 Fish
142 Total	3 Sea
21 Different Responses	2 Dam, Mountain, Ocean, Ski, Stream
KITCHEN (062)	0 Illegible
48 Food	1 Blank
29 Stove	142 Total
18 Cook	22 Different Responses
10 Sink	
7 House	
5 Cooking	
2 Cabinet, Cuisine, Knife, Mother, Room, Table, Utensils	
0 Illegible	
0 Blank	
142 Total	
24 Different Responses	

Table G-1 Continued

LAMP (041)

53 Light
44 Table
15 Desk
9 Bulb
7 Light Bulb, Shade
0 Illegible
0 Blank
142 Total
13 Different Responses

LEAF (099)

118 Tree
5 Fall
2 Autumn, Branch, Green,
Oak, Rake, Twig
0 Illegible
0 Blank
142 Total
15 Different Responses

LETTUCE (020)

34 Salad
21 Tomato
20 Vegetable
19 Cabbage
12 Rabbit
6 Tomatoe
3 Green, Head, Leaf
2 Carrot, Food, Garden,
Money, Tomatoes
1 Illegible
0 blank
142 Total
24 Different Responses

LIBRARY (057)

105 Books
26 Book
2 Research, Study
0 Illegible
0 Blank
142 Total
11 Different Responses

LION (110)

52 Tiger
19 Jungle
9 Roar
8 Animal, Cat, King
5 Africa, Den, Mane
4 Beast, Tigar
2 Cage, Circus
0 Illegible
0 Blank
142 Total
24 Different Responses

LIP (083)

87 Mouth
23 Kiss
8 Face
6 Tongue
2 Smile, Talk, Word
0 Illegible
1 Blank
142 Total
18 Different Responses

LIZARD (074)

49 Snake
41 Reptile
9 Animal
5 Desert, Tail
3 Chameleon, Frog, Salamander
2 Alligator, Chamelion, Water
1 Illegible
0 Blank
142 Total
28 Different Responses

LOAFER (016)

46 Shoe
34 Bum
11 Beggar
6 Laziness
4 Worker
3 Gooi-off, Hobo
2 Idleness, Lazy, Tramp,
Vagrant
0 Illegible
3 Blank
142 Total
35 Different Responses

Table G-1 Continued

LOBSTER (092)

24 Crab, Food
19 Seafood
15 Fish
10 Maine
8 Claw, Ocean
5 Sea
3 Oyster, Tail
2 Claws, Crustacean, New
England, Shell, Shrimp
0 Illegible
1 Blank
142 Total
27 Different Responses

LUNATIC (023)

25 Asylum
15 Idiot
14 Insanity, Maniac
9 Madman
7 Crazy, Moon
6 Nut
4 Man, Moron
3 Insane, Mad-man
2 Institution, Madness
0 Illegible
0 Blank
142 Total
41 Different Responses

MAID (116)

39 Servant
23 Butler
10 House
9 Negro
7 Girl
6 Woman
5 Helper
4 Cook
3 Clean, Cleaning, Help,
Housekeeper, Service
2 Work
0 Illegible
0 Blank
142 Total
36 Different Responses

MAN (034)

97 Woman
5 Boy, Human, Male, Women
2 Animal, Person
0 Illegible
0 Blank
142 Total
28 Different Responses

MEADOW (082)

60 Field
23 Grass
12 Pasture
8 Brook
4 Flowers
3 Cow
2 Countryside, Cows, Farm,
Fields, Green, Lane, Lark,
Lawn, Valley
0 Illegible
0 Blank
142 Total
29 Different Responses

MICROBE (052)

32 Germ
27 Microscope
11 Biology
9 Bacteria
8 Science
5 Organism
4 Animal
3 Disease, Germs
2 Amoeba, Atom, Bug, Slide
Minute, Molecule, Particle
0 Illegible
1 Blank
142 Total
41 Different Responses

Table G-1 Continued

MIDGET (096)

31 Dwarf
30 Giant
18 Circus
12 Small
6 Racer
5 Man, Person
4 Freak
2 Clown, Runt, Short, Shrimp
0 Illegible
3 Blank
142 Total
32 Different Responses

MILK (116)

81 Cow
14 Cream
7 Drink
6 Food
4 Baby, Cheese
3 Dairy
2 Cookies, Eggs, Glass
0 Illegible
0 Blank
142 Total
27 Different Responses

MINISTER (064)

57 Church
30 Freacher
10 Pastor
9 Religion
7 Priest
6 God
4 Bible
2 Clergyman, Man, Preach,
Protestant, Reverend,
Sermon
0 Illegible
0 Blank
142 Total
20 Different Responses

MINNOW (022)

98 Fish
17 Bait
8 Fishing
3 Guppy, Hook
2 Frog
0 Illegible
0 Blank
142 Total
17 Different Responses

MINUTE (097)

57 Second
30 Hour
27 Time
6 Clock
4 Small
2 Moment, Watch
0 Illegible
1 Blank
142 Total
20 Different Responses

MOB (048)

62 Riot
27 Crowd
10 Gang
7 People, Violence
3 Gangsters
2 Danger, Demonstration,
Noise
0 Illegible
1 Blank
142 Total
28 Different Responses

MONEY (045)

17 Dollar
16 Bank
12 Cash
10 Wealth
7 Dollars
5 Gold, Paper, Wallet
4 Coins, Job
3 Coin, Green, Rich
2 Bill, Bills, Currency,
Millionaire, Salary

Table G-1 Continued

0 Illegible
1 Blank
142 Total
55 Different Responses

MONKEY (042)

30 Ape
28 Animal
17 Zoo
14 Cage
7 Jungle, Tree
6 Banana
3 Circus, Gorilla
2 Face, Man, Peanuts, Tail
0 Illegible
0 Blank
142 Total
32 Different Responses

MOON (013)

56 Sun
12 Stars
9 Night
6 Sky
5 Earth, Star
4 Man
3 Harvest, Heavens, Light,
Planet, Rocket
2 Cheese, Crescent, Love,
Lunar, Silver
0 Illegible
0 Blank
142 Total
37 Different Responses

MORNING (061)

24 Sunrise
19 Dawn
18 Breakfast
17 Evening
16 Sun
13 Night
6 Day
5 Sunshine
4 Early, Light

3 Afternoon
2 Dew, Noon
0 Illegible
0 Blank
142 Total
22 Different Responses

MORON (103)

69 Idiot
10 Stupid
8 Imbecile
6 Dope
4 Stupidity
3 Fool, Nut, Person
2 Dumb, Duncie, Imbecile,
Joke, Pity
0 Illegible
0 Blank
142 Total
39 Different Responses

MOTHER (101)

91 Father
10 Woman
8 Love
7 Child
4 Home, Parent
2 Birth, Daughter
0 Illegible
0 Blank
142 Total
22 Different Responses

MOUNTAIN (084)

78 Hill
14 Valley
4 Peak
3 Range, Rock, Trees
2 Climb, Height, Mole-Hill,
Molehill, Plain, Rocky,
Snow
0 Illegible
0 Blank
142 Total
36 Different Responses

Table G-1 Continued

MOUSE (105)

81 Cat
29 Rat
9 Cheese
5 Trap
3 Animal, Mice
2 House, Man, Rodent
0 Illegible
0 Blank
142 Total
15 Different Responses

NECKLACE (059)

31 Jewelry
23 Pearl
22 Neck
15 Pearls
12 Diamond
9 Girl
8 Bracelet
2 Beads, Beauty, Diamonds,
Pendant, Woman
0 Illegible
0 Blank
142 Total
24 Different Responses

NEEDLE (039)

93 Thread
24 Pin
6 Sewing
4 Haystack
3 Eye
2 Point, Sew
0 Illegible
0 Blank
142 Total
15 Different Responses

NIGHT (102)

112 Day
8 Darkness
7 Dark
3 Stars

2 Evening, Lights, Sleep
0 Illegible
0 Blank
142 Total
13 Different Responses

OCEAN (046)

50 Sea
27 Water
9 Ship
8 Fish
7 Atlantic
6 Waves
5 Beach
4 Salt
3 Liner, Wave
2 Lake, Pacific, Ships,
Voyage
0 Illegible
1 Blank
142 Total
25 Different Responses

OIL (030)

39 Well
18 Gas
11 Grease
8 Gasoline
6 Petroleum
4 Car, Lubricant, Texas
3 Motor, Water
2 Can, Coal, Derrick, Field,
Fuel, Olive, Salad, Whale
0 Illegible
0 Blank
142 Total
44 Different Responses

ORANGE (037)

50 Fruit
35 Apple
11 Juice, Lemon
7 Color
4 Red, Tree
3 Florida

Table G-1. Continued

2 Grapefruit, Grove, Peel
0 Illegible
0 Blank
142 Total
22 Different Responses

ORGAN (002)

46 Music
34 Piano
21 Church
6 Heart, Pipe
5 Instrument, Stomach
3 Pipes
2 Body, Choir, Liver,
Monkey
0 Illegible
1 Blank
142 Total
19 Different Responses

OYSTER (106)

44 Pearl
28 Shell
18 Clam
10 Sea
8 Ocean
7 Stew
6 Seafood
3 Fish, Food
2 Shrimp
0 Illegible
0 Blank
142 Total
23 Different Responses

PAINT (060)

36 Brush
27 House
14 Color
11 Picture
6 Artist
5 Art
4 Coloring, Walls
3 Decoration
2 Painting, Wall, Wallpaper

0 Illegible
0 Blank
142 Total
38 Different Responses

PAN (005)

50 Pot
18 Dish
12 Food
7 Pots
5 Cooking, Skillet
4 Bread, Cake, Cook,
Stove
3 Frying, Gold, Kitchen
2 Bowl, Bucket, Kettle,
Plate
0 Illegible
0 Blank
142 Total
29 Different Responses

PAPER (051)

40 Pencil
18 News
11 Pen
9 Writing
6 Book
5 Letter, Pulp
4 Ink, Write
3 Homework, Sheet, Typewriter,
2 Stationary, Theme, White,
Wood
0 Illegible
0 Blank
142 Total
39 Different Responses

PARTY (065)

33 Fun
25 Dance
8 Birthday
7 People
5 House
4 Ball, Combo, Girls, Politics
3 Food

Table G-1 Continued

2 Band, Drink, Drinking,
Fraternity, Gathering,
Group, Music, Noise,
Refreshments
0 Illegible
0 Blank
142 Total
46 Different Responses

PEACE (085)

82 War
6 Dove
5 Quiet
4 Corps, Tranquility
3 Calmness, Prosperity, World
2 Calm, Conference
0 Illegible
1 Blank
142 Total
37 Different Responses

PEAR (100)

77 Fruit
22 Tree
17 Apple
14 Peach
2 Food, Preserves
0 Illegible
0 Blank
142 Total
14 Different Responses

PEARL (059)

72 Oyster
14 Necklace
13 Jewel
8 Gem
4 Diver
3 Jewelry, Money, Ocean
2 Beauty, Ruby
0 Illegible
0 Blank
142 Total
28 Different Responses

PEN (008)

51 Ink
48 Pencil
9 Fountain, Paper
7 Writing
4 Pig
3 Letter, Write
0 Illegible
1 Blank
142 Total
15 Different Responses

PENCIL (051)

41 Pen
31 Lead
26 Paper
11 Writing
6 Eraser, Write
4 Sharpener
2 Letter, Point, School,
Test, Work
0 Illegible
0 Blank
142 Total
19 Different Responses

PEOPLE (077)

27 Crowd
14 Friends, Humans
9 Men
7 Group
5 Animals, Population
4 Man, Nation
3 City, Mob, Persons
2 Beings, Citizens, Crowds,
Folks, Friend, Human,
Person, World
0 Illegible
0 Blank
142 Total
48 Different Responses

Table G-1 Continued

PEPPER (012)

109 Salt

8 Seasoning

7 Sneeze

5 Spice

2 Food, Shaker

0 Illegible

1 Blank

142 Total

14 Different Responses

PHYSICIAN (028)

114 Doctor

4 Illness, Sickness

3 Health, Medicine

2 Doctor, Healer, Man

0 Illegible

0 Blank

142 Total

16 Different Responses

PIT (021)

54 Hole

13 Pendulum

10 Barbecue

9 Snake

5 Lion, Well

4 Cherry, Trap

3 Olive

2 Cave, Fall, Mine, Stomach

0 Illegible

0 Blank

142 Total

40 Different Responses

POT (005)

52 Pan

24 Kettle

8 Food, Stove

6 Stew, Tea

5 Coffee

4 Cook, Flower

3 Soup

2 Belly, Kitchen, Pans, Roast

0 Illegible

1 Blank

142 Total

27 Different Responses

PRIEST (064)

37 Church

17 Father

15 Minister

13 Catholic

11 Religion

10 Preacher

5 Nun

3 Catholicism, Monk, Pastor

2 Catholic Church, Clergy,

Cross, Holy, Robe

0 Illegible

0 Blank

142 Total

30 Different Responses

PRISON (079)

34 Jail

22 Cell

15 Bars, Convict

11 Criminal

7 Crime

6 Prisoner

3 Inmate

2 Criminals, Escape, Men,

Prisoners, Warden

1 Illegible

0 Blank

142 Total

31 Different Responses

RABBIT (078)

26 Animal

13 Hare

12 Easter

9 Carrot, Ears, Fur

8 Bunny

6 Jack

4 Hunting

3 Dog, Hunter, Tail, Woods

2 Cotton, Forest, Hunt, Stew,

Trap

Table G-1 Continued

0 Illegible
0 Blank
142 Total
42 Different Responses

RADIO (109)

54 Television
31 Music
10 T.V.
9 Station
5 Clock
3 Announcer, Broadcast, Program
2 Antenna, Communication, Sound,
Transistor, Tube, Wireless
0 Illegible
0 Blank
142 Total
26 Different Responses

RAIN (067)

33 Storm, Water
10 Snow
9 Cloud
8 Clouds
7 Thunder, Umbrella
6 Shower
4 Drops
3 Wet
2 Flood, Sleet
0 Illegible
0 Blank
142 Total
30 Different Responses

RECORD (039)

34 Music
32 Phonograph
10 Player, Song
6 Stereo
5 Tape
4 Disc
3 Album, Disk, Hi-Fi
2 Account, Record Player,
Recorder, Recording, Report,
Victrola

0 Illegible
1 Blank
142 Total
35 Different Responses

REPTILE (074)

109 Snake
16 Alligator
5 Lizard
4 Animal
2 Turtle, Water
0 Illegible
0 Blank
142 Total
10 Different Responses

RESIDENT (068)

23 Home
21 House
11 Dormitory, Occupant
7 Dorm, Inhabitant
6 Owner
4 Doctor, Person
3 Student
2 Advisor, Boarder, Citizen,
City, Community, Neighbor,
People, Tenant, Woman
0 Illegible
0 Blank
142 Total
46 Different Responses

RIBBON (049)

37 Hair
17 Bow
10 Package
8 Blue
6 Prize
5 Award, Gift, Present,
Typewriter
3 Girl, Red, Winner
2 Box, Cloth, Color, Dress,
Scarlet, Scissors
1 Illegible
2 Blank
142 Total
38 Different Responses

Table G-1 Continued

RIFLE (026)

79 Gun
 7 Range
 6 Bullet, Hunting
 5 Weapon
 4 Pistol
 3 Target
 2 Army, Cartridge, Firearm,
 Hunt, Shotgun, Trigger, War
 0 Illegible
 0 Blank
 142 Total
 32 Different Responses

RING (027)

25 Bell, Wedding
 17 Finger
 16 Diamond, Marriage
 6 Circle, Engagement
 3 Jewelry, Phone, Telephone
 2 Bells, Circus
 0 Illegible
 0 Blank
 142 Total
 30 Different Responses

RIVER (044)

45 Water
 36 Stream
 13 Bank
 12 Boat
 7 Lake
 5 Mississippi
 3 Creek
 2 Bed, Brook, Current,
 Ocean, Swimming
 0 Illegible
 0 Blank
 142 Total
 23 Different Responses

ROAD (063)

48 Highway
 35 Car
 14 Street
 7 Travel
 5 Cars, Map
 4 Concrete
 3 Automobile, Path, Way
 2 Gravel
 0 Illegible
 0 Blank
 142 Total
 24 Different Responses

ROOM (076)

37 House
 17 Door
 15 Bed
 5 Space
 4 Bedroom, Building, Furniture,
 Walls
 3 Hall, Living, Quarters, Table
 2 Apartment, Bath, Chair,
 Class, Closet, Enclosure,
 Floor, Home, Key, Kitchen,
 Mate
 0 Illegible
 0 Blank
 142 Total
 41 Different Responses

ROSE (054)

100 Flower
 8 Red
 4 Garden
 3 Beauty, Bush, Petal
 2 Bud, Flowers, Smell, Thorn
 0 Illegible
 0 Blank
 142 Total
 23 Different Responses

Table G-1 Continued

SAINT (015)

20 Church
19 Sinner
14 Angel
9 Religion
7 God
6 Martyr
5 Christian, Heaven, Priest
4 Holy
3 Apostle, Devil, Paul, Person
2 Bishop, Catholic, Holiness,
Peter, Piety, Prophet, Sin
0 Illegible
0 Blank
142 Total
43 Different Responses

SALT (012)

84 Pepper
10 Food, Seasoning
8 Table
4 Ocean, Water
3 Sea, Shaker
2 Sugar
0 Illegible
0 Blank
142 Total
23 Different Responses

SAW (025)

32 Wood
23 Hammer
11 Tool
9 Blade, Tree
8 See
7 Board
6 Cut
5 Ax
3 Carpenter, Chain, Hack,
Lumber
2 Hatchet, Log
0 Illegible
0 Blank
142 Total
31 Different Responses

SCOUT (080)

71 Boy
8 Explorer, Indian
6 Boys
3 Army, Camp, Hunt, Search
2 Frontier, Girl, Hike,
Hunter, Man, Spy, Trail
0 Illegible
0 Blank
142 Total
38 Different Responses

SEA (C46)

50 Ocean
18 Water
16 Fish
15 Ship
8 Boat
7 Shore
4 Beach
3 Sailor
2 Lake, Land, Waves, Whale
0 Illegible
0 Blank
142 Total
25 Different Responses

SHEEP (082)

47 Wool
19 Lamb
13 Animal
9 Goat
7 Herd
5 Cows, Flock
4 Farm, Pasture
3 Cow, Dog, Ewe
2 Grass, Herder, Lambs,
Livestock, Mutton, Sheperd
0 Illegible
0 Blank
142 Total
26 Different Responses

Table G-1 Continued

SHELL (106)

65 Sea
9 Ocean
8 Beach
7 Clam
6 Conch
4 Fish, Oyster, Snail, Turtle
3 Crab, Seashore
2 Gun, Nut, Peanut, Shore
0 Illegible
0 Blank
142 Total
32 Different Responses

SHIP (090)

47 Boat
27 Ocean
11 Water
10 Sea
9 Navy
5 Sail, Vessel
4 Captain
3 Steam
2 Harbor, Sailing, Sailor
0 Illegible
0 Blank
142 Total
27 Different Responses

SHIRT (095)

38 Pants
17 Tie
13 Blouse
10 Clothes
9 Trousers
7 Man
6 Boy, Clothing
5 Skirt, Slacks
2 Apparel, Button, Buttons,
Collar, Madras
0 Illegible
0 Blank
142 Total
31 Different Responses

SHOE (014)

45 Foot
42 Sock
8 Feet, Sole
6 Lace
5 Socks
4 Loafer
3 Boot, Slipper
2 Horse, Leather, String
0 Illegible
0 Blank
142 Total
24 Different Responses

SINK (062)

38 Kitchen
23 Dishes
13 Swim
11 Basin
10 Faucet
9 Ship
7 Water
4 Bathroom, Drain
2 Drown, Float, Lavatory,
Soap, Stove
0 Illegible
0 Blank
142 Total
27 Different Responses

SINNER (015)

20 Saint
13 Devil
10 God
9 Church, Man
7 Evil, Hell
6 Criminal
5 Thief
4 Crook
3 Sin, Wrongdoer
2 Angel, Everyone, Repenter,
Wrong
0 Illegible
7 Blank
142 Total
47 Different Responses

Table G-1 Continued

SISTER (101)

115 Brother

7 Family

6 Girl

4 Relative

2 Brat, Nun

0 Illegible

0 Blank

142 Total

12 Different Responses

SKIRT (088)

57 Blouse

39 Girl

27 Dress

4 Shirt

3 Clothes

2 Sweater

0 Illegible

0 Blank

142 Total

16 Different Responses

SMOKE (108)

78 Fire

32 Cigarette

4 Chimney

3 Cigarettes

2 Cigar, Cigaretts, Cloud,
Pipe, Smog, Stack

1 Illegible

0 Blank

142 Total

22 Different Responses

SNAKE (021)

46 Reptile

8 Poison

7 Bite, Fear

6 Lizard, Serpent

5 Rattler

4 Ground, Rattle, Worm

3 Grass

2 Animal, Cobra, Danger,
Poisonous, Snail, Woods

0 Illegible

1 Blank

142 Total

46 Different Responses

SOAP (004)

30 Water

26 Bath

11 Wash

9 Clean

7 Cleanliness

6 Bar, Detergent, Dirt,
Suds

5 Lather

3 Face, Shower, Towel

2 Bubbles, Washing, Washrag

0 Illegible

2 Blank

142 Total

29 Different Responses

SOLDIER (026)

53 War

36 Army

8 Gun

6 Uniform

5 Battle, Fight

4 Fighter

3 Infantryman

2 Infantry, Military, Sailor,
Warrior

0 Illegible

0 Blank

142 Total

26 Different Responses

SPIDER (043)

70 Web

36 Insect

8 Bug

4 Legs

3 Webb

2 Black Widow, Cob Web,
Poison

0 Illegible

2 Blank

142 Total

21 Different Responses

Table G-1 Continued

STAMP (069)

58 Letter
42 Postage
16 Mail
7 Envelope
4 Collection
3 Post Office
2 Envelop
0 Illegible
0 Blank
142 Total
17 Different Responses

STARS (013)

46 Sky
32 Moon
9 Night
8 Stripes, Sun
5 Heaven
4 Galaxie, Heavens, Planets
3 Astronomy, Movie
2 Space
0 Illegible
0 Blank
142 Total
26 Different Responses

STEAM (010)

32 Heat
30 Engine
22 Water
9 Iron
8 Vapor
6 Bath
5 Kettle
4 Boat, Boil
3 Boiler, Power, Ship
2 Radiator
0 Illegible
0 Blank
142 Total
24 Different Responses

STEP (112)

33 Stairs
25 Stair
23 Walk
14 Foot
5 Ladder, Stairway
3 Jump, Movement, Porch,
Staircase
2 Church, Dance, March
0 Illegible
0 Blank
142 Total
32 Different Response

STORE (050)

27 Food
18 Grocery
13 Department
12 Clothes, Groceries
5 Market, Merchandise
4 Drug
3 Buy, Items, Shop
2 Building, Clothing,
Drugs, General, Money,
Purchase, Town
0 Illegible
1 Blank
142 Total
40 Different Responses

STOREHOUSE (053)

49 Warehouse
12 Food
9 Goods, Grain
7 Barn
6 Storage
5 Building
4 Surplus
3 Boxes, Trunk, Wharehouse
2 Box, Crates, Meat, Supply,
Tobacco
0 Illegible
0 Blank
142 Total
38 Different Responses

Table G-1 Continued

STORM (056)

48 Rain
37 Thunder
14 Wind
13 Hurricane
6 Lightning
4 Tornado, Weather
3 Clouds
2 Lighthouse
0 Illegible
0 Blank
142 Total
20 Different Responses

STOVE (018)

24 Heat
22 Oven
19 Cook
14 Food
8 Fire, Kitchen
7 Pot
6 Pipe
5 Gas
4 Wood
3 Coal, Cooking, Furnace,
Refrigerator
2 Hot, Pan
0 Illegible
0 Blank
142 Total
25 Different Responses

STREET (063)

39 Road
27 Avenue
13 Car
12 Corner
7 Cars
6 Pavement, Sidewalk
4 City
3 Highway, House
2 Alley, Houses, Sign,
Thoroughfare, Walker
0 Illegible
0 Blank
142 Total
27 Different Responses

SUMMER (118)

48 Winter
38 Vacation
8 Heat
7 Spring
6 Fun
5 Season, Sun
4 Fall
3 Hot, Swimming
2 Camp, Time
0 Illegible
0 Blank
142 Total
23 Different Responses

SYRUP (047)

45 Pancakes
32 Maple
17 Pancake
7 Sugar
6 Molasses
5 Tree
3 Waffles
2 Food, Honey, Hotcakes,
Sweetness, Waffle
0 Illegible
0 Blank
142 Total
29 Different Responses

TELEVISION (109)

45 Radio
14 Entertainment
10 Program
6 Picture, Show
4 Movie
3 Night, Screen, Set
2 Antenna, Box, Color,
Commercials, Home, News,
Shows, Sight, Tube,
Western
0 Illegible
0 Blank
142 Total
47 Different Responses

Table G-1 Continued

TENNIS (119)

33 Racket
30 Ball
23 Court
18 Sport
8 Game
6 Net, Racquet
3 Courts, Raquet
2 Table
0 Illegible
0 Blank
142 Total
20 Different Responses

THIEF (104)

32 Robber
29 Crook
9 Criminal, Robbery
8 Burglar
7 Steal
5 Theft
4 Jail
3 Beggar, Crime, Man
2 Burglar, Dishonest, Loot,
Money, Police, Stealing
0 Illegible
0 Blank
142 Total
35 Different Responses

THORN (054)

48 Rose
15 Bush
10 Pain
7 Rosebush
6 Briar, Sticker
5 Tree
4 Prick
3 Blood, Bramble, Crown,
Roses, Thistle
2 Cut, Rose Bush
0 Illegible
0 Blank
142 Total
37 Different Responses

THUNDER (056)

84 Lightning
20 Lightening
16 Storm
14 Rain
4 Noise
2 Cloud
0 Illegible
0 Blank
142 Total
8 Different Responses

TIGER (110)

75 Lion
19 Jungle
17 Cat
8 Animal
4 Beast
2 Hunting, India, Stripes
0 Illegible
0 Blank
142 Total
21 Different Responses

TOBACCO (108)

67 Cigarette
15 Smoke
12 Pipe
8 Cigarettes
7 Cigar
4 Cigarrette
3 Cigarette, Leaf
2 Crop
0 Illegible
0 Blank
142 Total
30 Different Response

TOMATO (020)

32 Vegetable
12 Soup
8 Juice, Lettuce, Plant,
Salad
6 Catsup, Fruit, Potato

1. Fish
 1. Stream
 1. Fishing
 1. Bass, River
 1. Illegible
 1. Blank
 142 Total
 13 Different Responses

1. Fish
 1. Stream
 1. Fishing
 1. Bass, River
 1. Illegible
 1. Blank
 142 Total
 13 Different Responses

1. Fish
 1. Stream
 1. Fishing
 1. Bass, River
 1. Illegible
 1. Blank
 142 Total
 13 Different Responses

TROUT (040)
 110 Fish
 15 Stream
 5 Fishing
 2 Bass, River
 0 Illegible
 0 Blank
 142 Total
 13 Different Responses

1. Fish
 1. Stream
 1. Fishing
 1. Bass, River
 1. Illegible
 1. Blank
 142 Total
 13 Different Responses

1. Fish
 1. Stream
 1. Fishing
 1. Bass, River
 1. Illegible
 1. Blank
 142 Total
 13 Different Responses

VINE (087)
 71 Grape
 21 Grapes
 16 Ivy
 6 Wine
 3 Robe
 2 Bush, Fruit, Plant, Tree
 1 Illegible
 0 Blank
 142 Total
 25 Different Responses

Table G-1 Continued

WAFFLE (047)

54 Pancake
22 Breakfast
21 Iron, Syrup
11 Food
3 Batter
2 Hot Cake
0 Illegible
1 Blank
142 Total
14 Different Responses

WATCH (038)

58 Time
41 Clock
21 Wrist
2 Band, Chain, Look,
Timepiece
0 Illegible
0 Blank
142 Total
21 Different Responses

WATER (004)

25 Drink
24 Glass
18 Lake
13 Thirst
12 Ocean
11 River
5 Liquid, Rain
3 Land
2 Boat, Cold, Sea
0 Illegible
1 Blank
142 Total
31 Different Responses

WEDDING (027)

49 Bride
43 Marriage
11 Ring
5 Bells, Love
3 Cake, Ceremony, Groom

2 Church, Couple, Nuptial,
Reception

0 Illegible
0 Blank
142 Total
24 Different Responses

WHALE (022)

33 Fish
27 Mammal
16 Ocean
9 Blubber, Jonah, Sea
7 Harpoon
5 Oil
4 Moby Dick
2 Boat, Harpon, Leviathan,
Porpoise, Shark
0 Illegible
1 Blank
142 Total
26 Different Responses

WHISKEY (065)

30 Alcohol
28 Liquor
17 Drink
10 Bourbon
7 Beer
6 Drunk
5 Gin
4 Bottle, Drunkard
3 Bar
2 Beverage, Licquor, Liqueur
0 Illegible
0 Blank
142 Total
34 Different Responses

WIDOW (043)

30 Woman
28 Death
21 Widower
15 Husband
7 Wife
6 Spinster
5 Black, Lady

Table G-1 Continued

3 Maid
2 Spider
0 Illegible
2 Blank
142 Total
28 Different Responses

WINDOW (072)

45 Glass
25 Door
20 Pane
8 Sill
7 View
5 House
4 Curtains, Shade
3 Curtain
2 Outside, Room, Screen
0 Illegible
0 Blank
142 Total
27 Different Responses

WOMAN (088)

91 Man
13 Girl
10 Lady
8 Female
3 Mother, Sex
2 Beauty, Dress, Love,
Wife
0 Illegible
0 Blank
142 Total
16 Different Responses

WOOL (009)

66 Sheep
19 Sweater
17 Lamb
8 Cotton
5 Clothes, Dress
3 Coat, Material, Yarn
2 Cloth, Skirt
0 Illegible
0 Blank
142 Total
20 Different Responses

WORKER (016)

39 Laborer
18 Labor
12 Factory
7 Job, Man, Work
4 Employee
2 Construction, Helper,
Labour, Skilled
0 Illegible
0 Blank
142 Total
51 Different Responses

WORM (070)

24 Fish
16 Earth, Fishing
10 Apple, Ground
9 Dirt
7 Bait, Snake
6 Animal, Insect
5 Book
4 Bird
2 Hook, Silk
0 Illegible
0 Blank
142 Total
32 Different Responses

YOLK (115)

110 Egg
13 Oxen
4 Ox
3 Burden
2 Harness
1 Illegible
1 Blank
142 Total
13 Different Responses

APPENDIX H

JOINT MEANINGFULNESS:

FREE ASSOCIATION NORMS FOR 120 WORD-PAIRS

Joint Meaningfulness

The norms for Joint Meaningfulness (JM) were collected from incoming freshmen during orientation week at Vanderbilt University in September, 1963. The 120 word-pairs were divided into six sets of 20 pairs and each set was presented in a mimeographed booklet. The booklets also contained material for the DV task. The arrangement of words in the JM and DV tasks was counterbalanced so that no subject received the same word in both tasks. Each of the six booklets was presented to 142 students. Of the total of 852 students, 592 were males and 260 were females. The ratio of males to females was similar for all six groups.

The word-pairs were listed in two columns and each pair was followed by a horizontal line on which the student was to write his association. The statement printed on the front of the booklets contained the following instructions:

"In this test...you will be asked to give associations to pairs of words rather than to single words. On the following pages are 20 pairs of words. Each pair of words is listed nine times. To the right of each pair is a blank space. In the blanks you are to write as many words as you can (up to 9) that bear some relationship to both words in the pair. Following is an example using only three blanks:

horse-wagon _____
horse-wagon _____
horse-wagon _____

Three words that could be placed in the blanks are ride,
tongue, and carry.

In giving your responses, it is important to attend to both words in the pair and to give only those responses that in some way are associated with both words. Give only those responses that you could justify as relating in some manner to both words. It would, for example, be hard to justify the response of nose to the pair horse-wagon. Some people might associate nose to horse separately, but it is doubtful that anyone would associate nose to wagon separately. The test is that the words might come to mind if you were associating to each word in each pair separately. The relationship between the word pairs and the associates need not be obvious ones, but in each instance you must feel that there is some relationship, however remote, between the words that you write in the blank spaces and both members of each word pair. The associations need not be nouns only. They can be any part of speech--nouns, adjectives, adverbs, and others."

Subjects were given one minute to write as many associations as they could think of (up to 9) for each pair. The experimenter called time at the end of each pair.

The first of the nine responses for each of the 120 pairs was tallied and is presented in Table H-1. Each response hierarchy is based upon a sample of 140 students. The hierarchies are arranged alphabetically by the stimulus word of the pair. "Single" responses, that is, associations given by only one subject, are not listed. The number of single responses given to a particular stimulus word can be calculated by counting the number of different responses listed and

subtracting from "Different Responses", since this category has included singles in its tally.

The reliability of the JM task was estimated by randomly dividing the booklets in half and correlating the number of responses given (maximum = 9). The uncorrected reliability coefficient for this correlation between Groups A and B was .95.

For Group A the mean number of responses per word-pair per subject was 5.77. The corresponding mean for Group B was 5.80, and the mean for the combined groups was 5.78. The standard deviation in the number of responses per word-pair per subject for Group A was 1.11 and for Group B was 1.12. For the combined groups the standard deviation was 1.10.

TABLE H-1

JOINT MEANINGFULNESS:

FREE ASSOCIATION NORMS FOR 120 WORD-PAIRS

Word-Pair	Word-Pair
ANTLERS - DEER	APPLE - PEAR (cont.)
14 Horns	0 Blank
13 Animal	140 Total
12 Hunt	15 Different Responses
11 Head	
10 Buck, Trophy	ASH - GIN
5 Doe	16 Party
4 Hunting, Stag	13 Cotton
3 Horn, Fight, Male	7 Whiskey
2 Fawn, Points, Rack, Hide, Hunter, Large	4 Burn, Vice
0 Illegible	3 Wood, Cigarette
0 Blank	2 Bar, Cards, Drink, Burned, Distill, Dry, Fire, Remains, Still
140 Total	0 Illegible
54 Different Responses	11 Blank
	140 Total
APE - MONKEY	65 Different Responses
30 Animal	
21 Man	ATHLETE - INVALID
16 Gorilla	16 People
9 Jungle	10 Human, Person
3 Zoo	8 Body
5 Chimp	6 Health, Opposite
4 Animals, Evolution, Chimpanzee	5 Injury
3 Baboon, Mammal, Tree	3 Ability, Football, Man, Physical
2 Anthropoid, Primate, Darwin	2 Movement, Muscles, Activity, Alive, Humans, Hurt, Legs, Strength, Opposites
0 Illegible	0 Illegible
0 Blank	5 Blank
140 Total	140 Total
38 Different Responses	61 Different Responses
APPLE - PEAR	
105 Fruit	
11 Tree	
9 Peach	
3 Jelly	
0 Illegible	

TABLE H-1 Continued

Word-Pair

Word-Pair

AX - HATCHET

45 Chop
30 Cut
15 Tree
14 Wood
5 Murder, Sharp
2 Blade, Head, Butcher
0 Illegible
0 Blank
140 Total
29 Different Responses

BABY - BOTTLE

38 Milk
12 Mother
10 Feed
7 Food
6 Drink, Child
5 Small
4 Crib, Nipple
3 Infant, Mouth, Cry,
Suck, Warm
2 Birth, Clean, Formula,
Young, Diaper, Youth
0 Illegible
0 Blank
140 Total
41 Different Responses

BALL - GOLF

40 Game
22 Club
14 Sport
7 Hit
6 Play
5 Course
4 Clubs, Tee
2 Iron, Putt, Drive,
Putter, Bag
0 Illegible

BALL - GOLF (cont.)

1 Blank
140 Total
40 Different Responses

BANDIT - THIEF

35 Robber
18 Crook
13 Steal
11 Rob, Robbery
9 Criminal
5 Money
3 Crime, Gun, Jail, Outlaw
2 Bad
0 Illegible
0 Blank
140 Total
36 Different Responses

BANKER - BEGGAR

88 Money
14 Man
5 Person
4 Men, Opposite, People
3 Human
2 Opposit, Society
0 Illegible
0 Blank
140 Total
23 Different Responses

BED - LAMP

53 Read
19 Reading
13 Night
7 Sleep
6 Light
5 Post, Study
4 Book, Room
3 Table
2 Bedroom, Eight

TABLE H-1 Continued

Word-Pair	Word-Pair
BED - LAMP (cont.)	BOY - MAN (cont.)
0 Illegible	0 Illegible
0 Blank	1 Blank
140 Total	140 Total
29 Different Responses	49 Different Responses
BEE - HONEY	BRICK - CLAY
52 Hive	30 House
26 Comb	17 Building
9 Flower	16 Build
6 Sweet	6 Red
4 Bear, Nest	5 Kiln, Straw, Mud, Mortar
3 Tree, Cone, Food	4 Hard
2 Pollen, Sticky	3 Stone, Fire, Material, Mold
0 Illegible	2 Home, Materials, Morter,
0 Blank	Cement, Ground, Mason, Earth
140 Total	0 Illegible
35 Different Responses	0 Blank
	140 Total
	40 Different Responses
BOAT - LAKE	BUG - INSECT
42 Water	17 Spray
21 Ski	11 Crawl
13 Fish	10 Fly
6 Fishing, Fun, Row	9 Bite
5 Sail, Skiing	8 Pest
4 Ride, Sport	6 Bee, Legs
3 Sailing, Swim	5 Spider
2 Drown, Float, Recreation	4 Wings, Beetle, Kill, Ant
0 Illegible	3 Wasp, Repellant
0 Blank	2 Biology, Raid, Small,
140 Total	Mosquito, Pests, Repellent,
32 Different Responses	Roach, D.D.T., Flowers,
	Plant
	0 Blank
BOY - MAN	0 Illegible
59 Male	140 Total
9 Growth	43 Different Responses
6 Brother, Masculine	
3 Maturity, Age, Person, Grow	
2 Girl, Growing, Son, Males,	
Youth	

TABLE H-1 Continued

Word-Pair

Word-Pair

BULLET - GUN

37 Shoot
17 Kill
11 Fire
7 Death
6 Weapon
4 Hunt
3 Shot, Dangerous, Deadly,
Rifle, Metal, Target, Wound
2 Noise, Police, Danger,
Firearm, Trigger
0 Illegible
0 Blank
140 Total
45 Different Responses

BUTTER - OIL

22 Grease
19 Fat, Cook
17 Greasy
9 Cooking
7 Margarine, Food
3 Popcorn, Fry
2 Kitchen
0 Illegible
0 Blank
140 Total
40 Different Responses

BUTTERFLY - WORM

23 Cocoon
12 Cacoen
10 Insect, Caterpillar
7 Animal
6 Moth, Change
4 Silk
3 Bug, Caterpillar, Cocoon,
Nature, Bird
2 Metamorphosis, Bugs, Larva,
Cattipillar, Creatures, Small,
Insects, Larvae, Catipillar,
Cocoon, Metamorphosis

BUTTERFLY - WORM (cont.)

0 Illegible
1 Blank
140 Total
49 Different Responses

BUTTON - SHIRT

25 Collar
10 Thread
9 Clothes
8 Pants, Sew
6 Cloth
5 Button Hole,
Clothing, Fasten
4 Man
3 Close, Hole, Dress, Tie
2 Blouse, Button-Hole,
Boy, White, Pocket,
Zipper
0 Illegible
0 Blank
140 Total
49 Different Responses

CAR - AUTOMOBILE

18 Transportation
17 Ride
15 Drive
9 Road
7 Wheels
6 Travel, Gas, Wreck
5 Tire
4 Motor, Wheel
3 Engine, Gasoline,
Speed, Tires
2 Vehicle, Highway, Truck
0 Illegible
0 Blank
140 Total
43 Different Responses

TABLE H-1 Continued

Word-Pair

Word-Pair

CARPET - WOOL

38 Rug
 21 Floor
 6 Covering
 5 House, Soft, Material
 4 Warm
 3 Walk, Sheep, Cloth
 2 Expensive, Feet, Fabric,
 Manufacturer, Thick,
 Warmth
 0 Illegible
 1 Blank
 140 Total
 46 Different Responses

CASTLE - HUT

27 Dwelling
 24 Home
 13 House
 9 Abode, Live
 5 Shelter
 3 People, Money
 2 Opposites, Size, Building,
 England, Feudal, Homes, King
 0 Illegible
 0 Blank
 140 Total
 47 Different Responses

CHEESE - MOUSE

65 Trap
 12 Eat, Rat
 4 Food, Holes, Cat
 3 Catch, Hole
 2 Bait, Capture, House,
 Cartoon, Smell
 0 Illegible
 1 Blank
 140 Total
 33 Different Responses

CHILD - KID

23 Young
 10 Boy
 9 Youth, Baby

CHILD - KID (cont.)

7 Youngster
 6 Children, Play
 4 Games, Brat, Brother
 3 School, Mother, Parents,
 Fun, Family
 2 Girl, Adolescent, Adult,
 Parent, Slang, Toy,
 Infant, Same
 0 Illegible
 0 Blank
 140 Total
 49 Different Responses

CITIZEN - RESIDENT

13 Town
 11 Country
 10 Community
 9 Vote
 8 Person, City
 7 State, Voter
 6 Live, Home
 5 Neighbor
 3 House, Nation, American
 2 Inhabitant, U.S.A., Owner,
 Immigrant, Native
 1 Illegible
 0 Blank
 140 Total
 48 Different Responses

CITY - TOWN

33 People
 18 Village
 6 State, Country, Metropolis
 5 Government
 4 Streets, Population, Street,
 Mayor
 3 Size, Urban
 2 Buildings, Live, Noise, Suburb,
 Traffic, Citizen, Metropolitan

TABLE H-1 Continued

Word-Pair	Word-Pair
CITY - TOWN (cont.)	CLOSET - STOREHOUSE (cont.)
0 Illegible	3 Boxes, Dark, Broom
0 Blank	2 Keep, Tools, Goods,
140 Total	Pantry, Storeroom, Clothes
47 Different Responses	0 Illegible
	1 Blank
	140 Total
	43 Different Responses
CLAW - LOBSTER	
19 Crab	
15 Pinch	
9 Sea	
7 Food, Red, Protection	
6 Ocean, Animal	
4 Shell	
3 Appendage, Cut, Fish,	
Meat, Sharp	
2 Hard, Pincher, Eat, Foot,	
Wepon, Dinner	
0 Illegible	
0 Blank	
140 Total	
53 Different Responses	
CLOCK - WATCH	
119 Time	
3 Test	
2 Hand, Hands, Work, Jewel	
0 Illegible	
0 Blank	
140 Total	
17 Different Responses	
CLOSET - STOREHOUSE	
35 Clothes	
29 Storage	
8 Store	
6 Warehouse	
5 Room	
4 Junk, Trunk	
	CLOTHING - STORE
	26 Buy
	14 Shirt
	11 Department
	9 Dress
	7 Money
	6 Clothes
	4 People
	3 Merchandise, Pants,
	Apparel, Clerk, Suit,
	Salesman, Suits
	2 Garment, Buying, Cloth,
	Coat, Hat, Shirts,
	Shop, Mens
	0 Illegible
	0 Blank
	140 Total
	48 Different Responses
	CORN - FIELD
	28 Farm
	13 Crop
	11 Grow
	10 Plow
	8 Plant
	6 Farmer
	4 Dirt, Tractor
	3 Food, Grain, Soil, Stalk
	2 Ears, Ground, Scarecrow,
	Stalks, Planting, Rows,
	Roots

TABLE H-1 Continued

Word-Pair	Word-Pair
CORN - FIELD (cont.)	CROWD - MOB (cont.)
0 Illegible	4 Group
0 Blank	3 Push
140 Total	2 Noise, Panic
46 Different Responses	1 Illegible
	0 Blank
	140 Total
	39 Different Responses
COURT - TENNIS	
44 Ball	
19 Racket	
13 Game	
12 Net, Player	
9 Play	
8 Sport	
3 Raquet	
2 Clay, Match, Racquet, Balls	
0 Illegible	
0 Blank	
140 Total	
24 Different Responses	
	CURRENCY - MONEY
	27 Bank
	19 Spend
	9 Dollar
	7 Bills, Cash
	6 Coin
	5 Buy, Paper
	3 Dollars, Finance, Rich, Check
	2 Coins, Mint, Change, Economy, Exchange, Pay, Silver, Green
	0 Illegible
	0 Blank
	140 Total
	47 Different Responses
CROCODILE - ALLIGATOR	
43 Reptile	
24 Swamp	
13 Animal	
10 Water	
5 Florida, Reptiles, Teeth	
4 Jungle, River	
3 Animals, Swamps, Dangerous	
2 Bite, Leather, Skin, Swim	
0 Illegible	
0 Blank	
140 Total	
36 Different Responses	
	DAGGER -- KNIFE
	23 Stab
	20 Kill
	14 Blade
	12 Sharp
	11 Weapon
	10 Blood
	8 Cut
	6 Death, Murder
	3 Dangerous, Point
	2 Sword, Fight, Wound, Danger
	0 Illegible
	0 Blank
	140 Total
	31 Different Responses
CROWD - MOB	
59 Riot	
23 People	
7 Gang, Violence	

TABLE H-1 Continued

Word-Pair

Word-Pair

DIAMOND - JEWEL

26 Ring
 18 Gem
 10 Necklace, Precious
 6 Valuable
 5 Expensive, Money
 4 Jewelry, Stone
 3 Value, Wealth, Bracelet,
 Pearl, Rare, Jem
 2 Beautiful, Beauty, Pretty,
 Rich, Setting, Sparkle
 0 Illegible
 0 Blank
 140 Total
 43 Different Responses

DOCTOR - PHYSICIAN

31 Medicine
 12 Sickness, Sick
 8 Heal
 7 Illness, Patient
 6 Health, Hospital
 5 Nurse
 4 Cure, M.D.
 3 Help, Medical, Surgeon
 2 Father, Shot, Patients
 0 Illegible
 0 Blank
 140 Total
 40 Different Responses

DOG - CAT

47 Fight
 44 Animal
 11 Animals
 10 Pet
 4 Pets
 3 Mouse
 2 Food, Animosity, Leash
 0 Illegible
 0 Blank
 140 Total
 25 Different Responses

DREAM - NIGHT

82 Sleep
 17 Nightmare
 12 Bed
 5 Dark
 3 Darkness, Day
 2 Fantasy, Slumber
 0 Illegible
 1 Blank
 140 Total
 21 Different Responses

DUST - BOWL

12 Dirt
 7 Midwest
 6 Clean, Desert,
 Football, Dirty
 5 Dry, Oklahoma,
 West, Drought
 4 Kansas
 3 Clay, Farm
 2 Farmer, Cleaning, Cloth,
 Collect, Mid West, Plains,
 Texas, Wind, Dish, Game,
 Hot, Sand, Table
 0 Illegible
 0 Blank
 140 Total
 65 Different Responses

EAGLE - BIRD

39 Fly
 32 Nest
 15 Feather
 10 Beak
 5 Flight
 4 Wings, Egg
 3 Bald, Feathers, Hawk
 2 Animal, Flying, Nation
 0 Illegible
 0 Blank
 140 Total
 28 Different Responses

TABLE H-1 Continued

Word-Pair	Word-Pair
EMBLEM - LABEL	FARM - BARN (cont.)
11 Tag, Insignia	10 Animal
9 Name	9 Cows
7 Sign	7 Horses
6 Seal, Sticker	6 Farmer
5 Coat, Crest	5 Yard
4 Patch	4 Cattle
3 Trademark, Badge, Pin, Ensignia	3 Silo, Country
2 Can, Club, Jacket, Bottle, Clothes, Design, Mark, Product, Shirt, Symbol, Title, Uniform	2 Chicken, House
0 Illegible	0 Illegible
0 Blank	0 Blank
140 Total	140 Total
65 Different Responses	24 Different Responses
ENGINE - STEAM	FIG - LEAF
20 Train	71 Tree
18 Locomotive	17 Adam
15 Power	11 Fruit
11 Boat	8 Plant
6 Watt	3 Adam & Eve
5 Work	2 Grow, Modesty, Food
4 Energy, Machine	0 Illegible
3 Water, Locomotion, Coal	1 Blank
2 Steamboat, Turbine, Fulton, Combustion, Heat, Ship, Motion	140 Total
0 Illegible	30 Different Responses
0 Blank	FISH - TROUT
140 Total	38 Stream
43 Different Responses	12 Water
FARM - BARN	10 Fishing
27 Cow	3 Lake
23 Horse	7 Food
15 Hay	6 River
14 Animals	5 Rod
	4 Worm, Hook, Line, Swim
	3 Fisherman, Catch, Fly, Pole
	2 Boat, Bait, Bass, Brook, Sport, Fin
	0 Illegible
	1 Blank

TABLE H-1 Continued

Word-Pair	Word-Pair
FISH - TROUT (cont.)	GENIUS - MORON
140 Total	30 Intelligence
34 Different Responses	8 Brain
	7 Unusual
FOOT - SHOE	6 Opposites
39 Sock	5 School
25 Walk	4 Brains, Intellect, People,
8 Toe	Abnormal, Opposite, I.Q.
7 Heel	3 Difference, Different,
6 Fit, Size	Contrast, Extremes, Mind
4 Wear	2 Ability, Extreme, Freak,
3 Toes	Person, Stupid, Unnatural
2 Socks, Sole, Apparel, Person,	0 Illegible
Salesman, Store, Walking,	0 Blank
Cover	140 Total
0 Illegible	54 Different Responses
0 Blank	
140 Total	GERM - MICROBE
42 Different Responses	38 Microscope
	24 Disease
FRIEND - ENEMY	16 Small
26 Person	11 Bacteria
20 People	9 Science, Biology
16 War	5 Tiny
6 Foe	3 Scientist
4 Fight, Man	2 Virus
3 Acquaintance, Emotion,	0 Illegible
Good, Russia	0 Blank
2 Ally, Battle, Boy, Opposite,	140 Total
Pal, Opposites, Help, Love	32 Different Responses
0 Illegible	
1 Blank	GIANT - MIDGET
140 Total	28 Size
53 Different Responses	24 Circus
	10 Freak
GARBAGE - CAN	8 Opposite
52 Trash	6 Height
20 Waste	5 Contrast
8 Food	3 Opposites, Abnormal,
6 Refuse	Person
5 Disposal, Truck	2 Growth, Man, Odd, Unusual,
3 Collector, Container, Dispose	People, Glands, Deformed,
2 Dirt, Smell, Smelly, Collect	Comparison
0 Illegible	0 Illegible
0 Blank	
140 Total	
41 Different Responses	

TABLE H-1 Continued

Word-Pair	Word-Pair
GIANT - MIDGET (cont.)	GOD - DEVIL (cont.)
0 Blank	8 Hell
140 Total	7 Bible
52 Different Responses	5 Good
	4 Power
GIRL - SCOUT	3 Opposite, Evil, Theology, Conflict, Sin, Powerful
18 Cookies, Boy	2 Eternity, Man, Opposites, Spiritual, Christian, Fear, Enemies, Influence, Spirit, Belief
12 Brownie	0 Illegible
8 Camp, Boy Scout	1 Blank
7 Camping	140 Total
4 Boy-Scout, Green, Young	51 Different Responses
3 Troop	
2 Child, Hike, Person, Uniform, Club, Cook, Duty, Girl Scout, Leader, Organization, Honor, Brownies	GOOSE - DUCK
0 Illegible	24 Bird
0 Blank	17 Fowl
140 Total	8 Animal, Hunt
52 Different Responses	7 Water, Fly
	6 Cander
GLOVE - PEOPLE	4 Hunting, Birds, Feathers, Feather, Swim
72 Hand	3 Animals, Poultry, Dinner
8 Hands	2 Quack, Bill, Chicken, Farm, Food, Gun, Lake, Pond, Waddle
5 Baseball, Clothing, Wear, Fingers	0 Illegible
4 Warm	0 Blank
3 Cold, Warmth	140 Total
2 Fit, Handshake, Clothes, Shake	40 Different Responses
0 Illegible	
0 Blank	GRAPE - VINE
140 Total	38 Wine
33 Different Responses	13 Fruit
	10 Grow
GOD - DEVIL	9 Plant
38 Religion	6 Gossip, Vineyard
10 Heaven	

TABLE H-1 Continued

Word-Pair

Word-Pair

GRAPE - VINE (cont.)

4 Leaf
3 Stem, Vinyard
2 Arbor, Growth, Smoke, Tree,
Food, Jelly, Juice, Orchard,
Cling
0 Illegible
0 Blank
140 Total
46 Different Responses

GUN - TRIGGER

37 Shoot
18 Bullet
16 Rifle
11 Pull
8 Fire
6 Kill
3 Shot, Weapon
2 Pistol, Happy, Shotgun,
Murder, Stock
0 Illegible
0 Blank
140 Total
40 Different Responses

HAMMER - SAW

31 Carpenter
24 Tool
22 Tools
15 Wood
14 Build
7 Work
3 Cut, Nail
2 Nails, Workshop, Construction
0 Illegible
0 Blank
140 Total
26 Different Responses

HAND - FINGER

22 Ring
15 Arm
9 Thumb, Body
7 Nail
5 Glove
4 Bone, Wrist
3 Hold, Feel, Gun, Point,
Skin, Write, Nails
2 Limb, Flesh, Part,
Animal
0 Illegible
0 Blank
140 Total
55 Different Responses

HARBOR - SHIP

19 Water
13 Port
16 Dock
15 Boat, Ocean
6 Sea
4 Light, Anchor, Boats
3 Sail
2 Wharf, Safety, Travel,
Tug, Cargo, Lights
0 Illegible
0 Blank
140 Total
41 Different Responses

HAT - COAT

16 Clothing, Clothes
11 Tie, Rack
10 Cold
8 Rain
7 Winter
5 Gloves
4 Closet, Protection,
Apparel

TABLE H-1 Continued

Word-Pair	Word-Pair
HAT - COAT (cont.)	JAIL - PRISON (cont.)
3 Weather, Garments, Suit	6 Cell
2 Shoes, Cover, Travel, Glove, Man, Umbrella	4 Law
0 Illegible	3 Crook
0 Blank	2 Confinement, Inmate, Warden, Bar, Guard, Incarcerate
140 Total	0 Illegible
43 Different Responses	0 Blank
HEAD - ORGAN	140 Total
50 Body	45 Different Responses
25 Brain	JUSTICE - PEACE
5 Ear, Eyes, Music	49 Law
4 Eye	12 Judge
3 Noise, Nose	10 Marriage
2 Church, Heart, Vital, Mouth	4 Government, Lawyer
0 Illegible	3 Laws, Court, Freedom, Marry
0 Blank	2 Necessary, Right, War, Tranquility, Officer, Friendship, Liberty
140 Total	0 Illegible
46 Different Responses	0 Blank
HOUR - MINUTE	140 Total
78 Time	49 Different Responses
33 Second	KING - GOVERNOR
16 Clock	52 Ruler
3 Day, Watch	15 Rule
0 Illegible	9 Government
0 Blank	8 Leader
140 Total	7 President
12 Different Responses	5 Power, Authority
JAIL - PRISON	2 Kennedy, State, Official
23 Criminal	0 Illegible
19 Prisoner	0 Blank
14 Crime	140 Total
13 Convict	43 Different Responses
8 Bars	
7 Punishment	

TABLE H-1 Continued

Word-Pair	Word-Pair
LETTUCE - TOMATO	LION - TIGER (cont.)
49 Sandwich	0 Illegible
32 Salad	0 Blank
13 Vegetable	140 Total
12 Food	38 Different Responses
7 Bacon	
5 Vegetables	
3 Sandwhich, Sandwitch	
2 Salid, Hamburger, Edible	
0 Illegible	
0 Blank	
140 Total	
22 Different Responses	
	LIP - BACON
	48 Eat
	12 Food
	9 Chew
	8 Taste
	6 Meat, Mouth
	5 Fat
	4 Pig
	3 Flesh
	2 Consume, Breakfast, Teeth, Burn
	0 Illegible
	6 Blank
	140 Total
	35 Different Responses
LIBRARY - BOOK	
43 Read	
15 Librarian	
12 Reading	
8 Study	
5 School, Shelf	
3 Borrow, Fine, Overdue, Shelves, Card, Reference	
2 Volume, Catalogue, Learn, Information, Volumes, Knowledge, Paper	
0 Illegible	
0 Blank	
140 Total	
39 Different Responses	
	LIZARD - REPTILE
	37 Snake
	10 Crawl
	8 Animal
	7 Alligator
	5 Scale
	3 Amphibian, Cold, Scales, Green, Slimy
	2 Ground, Prehistoric, Scaly, Class, Desert, Family, Frog, Salamander
	0 Illegible
	0 Blank
	140 Total
	60 Different Responses
LION - TIGER	
30 Jungle	
23 Animal	
15 Cat	
10 Zoo	
5 Cats	
4 Animals, Ferocious, Africa, Fierce, Panther	
3 Beast, Dangerous, Leopard	
2 Tamer, Circus, Hunter	

TABLE H-1 Continued

Word-Pair

Word-Pair

LUNATIC - FOOL

37 Idiot
16 Crazy
9 Stupid
7 Moron
6 Asylum, Insane
5 Nut, Silly
3 Imbecile, Person
2 Crasy, Dope, Madman, Man,
Mind, Dumb, Sorry, Maniac
0 Illegible
0 Blank
140 Total
45 Different Responses

MILK - MAID

31 Cow
12 Farm
6 Bucket
5 Serve
4 White, Kitchen, Stool,
3 Dairy, Cook, Breakfast,
Service, Girl
2 Bottle, Drink, Man, Holland,
Pail, Pitcher, Servant, Pour,
Home, Helpful, Butter, Useful
0 Illegible
1 Blank
140 Total
57 Different Responses

MINNOW - WHALE

43 Fish
42 Water
10 Ocean
9 Swim
7 Opposite
6 Size
3 Contrast

MINNOW - WHALE (cont.)

2 Bait, Fin, Sea, Tail,
Large
0 Illegible
0 Blank
140 Total
22 Different Responses

MOON - STARS

44 Sky
23 Night
12 Astronomy
9 Sun
8 Space
6 Universe
4 Celestial, Galaxy
3 Heavens, Universal, Planets
2 Love, Light, Telescope,
Planter
0 Illegible
0 Blank
140 Total
29 Different Responses

MORNING - DAWN

36 Sun
19 Sunrise
17 Early
8 Day
5 Dew
3 Sleep, Awake, Beginning,
Daybreak, Rise, Night
2 Arise, Sun-Rise, Awakening,
New
0 Illegible
0 Blank
140 Total
44 Different Responses

TABLE H-1 Continued

Word-Pair

Word-Pair

MOTHER - SISTER

25 Family
 18 Female
 16 Woman
 9 Brother, Women
 8 Love
 7 Girl
 6 Females, Relatives
 5 Father, Daughter
 3 Relative, Aunt,
 Relationship
 2 Related, People
 0 Illegible
 0 Blank
 140 Total
 27 Different Responses

MOUNTAIN - HILL

23 Valley
 18 Climb
 10 Trees
 7 High
 5 Mole, Height
 3 Forest, Land, Range, Slope
 Steep
 2 Grass, Incline, Rises, Size,
 Peak, Rise, Clift, Knoll,
 Earth, Elevation
 0 Illegible
 0 Blank
 140 Total
 58 Different Responses

NEEDLE - RECORD

30 Phonograph
 29 Music
 22 Play
 7 Scratch
 5 Stereo, Player, Sound
 4 Hi-Fi, Record Player
 3 Groove
 2 Diamond, Song, Album,
 Victrola

NEEDLE - RECORD (cont.)

0 Illegible
 0 Blank
 140 Total
 32 Different Responses

OCEAN - SEA

37 Water
 28 Ship
 20 Fish
 6 Lake
 5 Salt
 3 Deep, Bay, Beach, Boat,
 Shore, Wave, River
 2 Sand, Ships, Waves
 Roar
 0 Illegible
 0 Blank
 140 Total
 31 Different Responses

ORANGE - FRUIT

25 Tree
 17 Citrus
 11 Juice, Eat
 9 Breakfast, Apple
 8 Food
 7 Florida
 4 Sweet, Grapefruit
 3 Good
 2 Acid, Seeds, Bowl, Lemon
 0 Illegible
 0 Blank
 140 Total
 39 Different Responses

OYSTER - SHELL

35 Pearl
 30 Ocean, Sea
 6 Food, Clam
 3 Beach

TABLE H-1 Continued

Word-Pair

Word-Pair

OYSTER - SHELL (cont.)

2 Hard, Sand, Muscle,
Pearls
0 Illegible
0 Blank
140 Total
32 Different Responses

PAINT - BRUSH

18 House
14 Artist
12 Painter
10 Painting, Picture
9 Wall, Color
6 Art
5 Work
4 Clean, Paint, Can
3 Canvas, Decorate
2 Bristles, Colors, Cover,
Sign, Walls
0 Illegible
0 Blank
140 Total
38 Different Responses

PAPER - PENCIL

54 Write
24 Pen
19 Writing
9 Test
5 School
4 Letter, Desk
3 Theme
2 Work
0 Illegible
0 Blank
140 Total
24 Different Responses

PEARL - NECKLACE

34 Jewelry
19 Neck
7 Beads
5 Wear
4 White, Jewels, Woman,
Ring
3 Pretty, Girl, String,
Jewel, Dress
2 Beauty, Clasp, Jewelry,
Bracelet, Jewelry, Gift,
Ornament, Oyster, Throat,
Diamond, Jewlery, Round
0 Illegible
0 Blank
140 Total
45 Different Responses

PEN - INK

75 Write
27 Paper
6 Writing
5 Pencil
4 Letter
2 Black, Letters,
Desk, Table
0 Illegible
0 Blank
140 Total
24 Different Responses

POT - PAN

41 Cook
30 Kitchen
17 Food
7 Stove
4 Cooking, Dishes, Dish
3 Fry, Utencil, Wash,
Utensils

TABLE H-1 Continued

Word-Pair	Word-Pair
POT - PAN (cont.)	RAIN - BOW
2 Container, Eat	21 Color
0 Illegible	11 Colors
0 Blank	8 Storm
140 Total	6 Pretty, Sun, Rainbow, Sky
31 Different Responses	5 Gold, Water
	4 Clouds
PRIEST - MINISTER	3 Flood, Spectrum, Rain, Wet, Cloud
53 Church	2 Nature, Promise, Coat, Shower, God, Umbrella
31 Religion	0 Illegible
15 God	3 Blank
8 Pastor	140 Total
4 Preacher	49 Different Responses
3 Clergy	
2 Bible, Father, Rabbi, Worship, Preach, Sermon	RIVER - BRIDGE
0 Illegible	53 Water
0 Blank	26 Cross
140 Total	7 Boat
26 Different Responses	5 Car, Crossing, Stream
	3 Lake, Span
RADIO/TELEVISION	2 Ford, Transportation, Creek
15 Entertainment	1 Illegible
12 Communication	0 Blank
9 Electronics	140 Total
7 Sound	37 Different Responses
6 Announcer, Music	
5 Tubes	ROOM - CEILING
4 Program, Listen, Entertain	46 Wall
3 Star, Appliance, Noise, Electricity	26 Floor
2 Electronic, Hear, Aerial, News, Antenna	12 Paint
0 Illegible	10 House
1 Blank	9 Light
140 Blank	5 Roof
64 Different Responses	3 Chandelier, High, Walls, Plaster

TABLE H-1 Continued

Word-Pair	Word-Pair
ROOM - CEILING (cont.)	SALT - PEPPER
2 Color, Enclosure, Corner, Top	36 Shaker
0 Illegible	30 Seasoning
0 Blank	29 Food
140 Total	8 Season
26 Different Responses	7 Spice
	6 Table
	4 Shakers
	3 Eggs, Spices
	2 Condiment, Eat, Sugar
	0 Illegible
	0 Blank
	140 Total
	20 Different Responses
ROSE - THORN	
45 Bush	
19 Flower	
9 Plant	
7 Stem	
6 Prick	
4 Garden, Hurt, Stick	
3 Beauty, Life, Red	
2 Sticker, Pretty, Vine, Protection, Scratch, Sharp	
0 Illegible	
0 Blank	
140 Total	
38 Different Responses	
SAINT - SINNER	
21 God	
20 Religion, Church	
6 Heaven, Human, Sin	
5 People	
3 Good, Morals, Men, Person, Bible	
2 Opposite, Right, Deeds, Extremes, Morality	
0 Illegible	
0 Blank	
140 Total	
48 Different Responses	
	SHEEP - MEADOW
	35 Grass
	26 Graze
	17 Farm
	7 Pasture
	5 Field
	4 Grazing, Shepherd
	3 Food
	2 Cow, Eat, Herd, Peaceful, Hills
	0 Illegible
	0 Blank
	140 Total
	42 Different Responses
	SINK - KITCHEN
	41 Dishes
	16 Wash
	10 Water
	9 Food, Drain
	7 Clean
	6 Dish, Stove

TABLE H-1 Continued

Word-Pair

Word-Pair

SINK - KITCHEN (cont.)

4 House, Work
3 Faucet
2 Cabinet, Washing
0 Illegible
0 Blank
140 Total
34 Different Responses

SNAKE - PIT

19 Danger
12 Dangerous
11 Death
8 Viper
5 Fear
4 Trap, Ground, Hole,
Horror
3 Evil, Bite, Zoo,
Reptile
2 Asylum, Cobra, India,
Posion, Torture
0 Illegible
1 Blank
140 Total
61 Different Responses

SOAP - WATER

50 Wash
27 Clean
26 Bath
8 Dirt
2 Face, Shower, Suds,
Cleanse
0 Illegible
0 Blank
140 Total
19 Different Responses

SOLDIER - RIFLE

63 War
23 Army
12 Shoot
8 Kill
6 Gun
3 Carry
2 March, Battle, Weapon,
Milatary
0 Illegible
0 Blank
140 Total
28 Different Responses

SPIDER - WIDOW

56 Black
16 Poison
5 Web, Death, Insect
4 Alone, Legs
3 Bug, Old
2 Danger, Deadly, Animal,
Female, Lonely
0 Illegible
3 Blank
140 Total
41 Different Responses

STAMP - ENVELOPE

57 Letter
51 Mail
9 Lick
4 Address
3 Post Office, Send
2 Paper, Postage
0 Illegible
0 Blank
140 Total
17 Different Responses

TABLE H-1 Continued

Word-Pair	Word-Pair
STEP - BROTHER	STREET - ROAD (cont.)
21 Sister	0 Illegible
10 Mother	0 Blank
7 House	140 Total
6 Home	48 Different Responses
5 Family, Father	
3 Divorce, Half, Relative, Stepfather, Walk, Foster	SUMMER - CHURCH
2 Careful, Kin, Person, Fall, Foot, Friend, Hate, Marriage, Useful, Step-Father, Step- Sister	18 Hot
0 Illegible	11 School
5 Blank	10 Sunday
140 Total	8 Camp
57 Different Responses	6 Vacation
	3 Picnic, Winter, Go, Bible School
STOVE - COFFEE	2 Warm, Warmth, Worship, Absence, God, People, Vespers, Flowers, Morning
23 Heat	0 Illegible
20 Pot	2 Blank
19 Hot	140 Total
15 Cook	71 Different Responses
7 Boil, Kitchen, Food	
6 Breakfast, Morning	THUNDER - STORM
5 Brew	62 Rain
2 Warmth, Make	40 Lightning
1 Illegible	10 Lightening
0 Blank	4 Loud
140 Total	3 Weather, Clouds, Noise
32 Different Responses	2 Cloud, Dark
	0 Illegible
STREET - ROAD	0 Blank
35 Car	140 Total
13 Highway	20 Different Responses
10 Avenue	
6 Drive, Travel	
5 Sign, Transportation	
4 Cross, Pavement	
3 City, Gravel, Town, Way	
2 Asphalt, Cars, Light, Route	

TABLE H-1 Continued

Word-Pair

Word-Pair

TOBACCO - SMOKE

50 Cigarette
19 Cigar
11 Pipe
9 Cancer
7 Cigarettes
3 Cigarette, Habit,
Nicotine
2 Cough, Cigars,
Cigarette
0 Illegible
0 Blank
140 Total
40 Different Responses

TURTLE - RABBIT

54 Race
32 Animal
16 Animals
6 Speed
3 Fable, Feet
2 Forest, Slow
0 Illegible
0 Blank
140 Total
29 Different Responses

TYPEWRITER - RIBBON

30 Type
23 Ink
11 Paper
9 Print
6 Keys
5 Letter
4 Black, Write
3 Key, Words, Secretary
2 Letters, Red, Blue
0 Illegible
0 Blank
140 Total
44 Different Responses

WAFFLE - SYRUP

38 Breakfast
25 Food
17 Eat
15 Pancakes, Pancake
14 Butter
3 Delicious
2 Good, Iron
0 Illegible
0 Blank
140 Total
19 Different Responses

WEDDING - RING

78 Marriage
12 Bride
10 Love
5 Ceremony
4 Groom
3 Husband
2 Engagement, Finger,
Married, Girl, Woman
0 Illegible
0 Blank
140 Total
30 Different Responses

WHISKEY - PARTY

33 Drunk
28 Drink
18 Fun
6 Drinking
5 Booze
4 Beer, Fraternity
3 Drunks
2 Cocktail, Drinks, Brawl,
Drunkenness, Scotch,
People
0 Illegible
0 Blank
140 Total
41 Different Responses

TABLE H-1 Continued

Word-Pair	Word-Pair
WINDOW - FROST	WORKER - LOAFER
35 Cold	21 Job
32 Winter	8 Opposite
10 Pane	7 Man
7 Snow	5 Lazy, Employee, Labor,
4 Outside	Person, Pay
3 Clear, Weather	4 Laborer, People
2 Glass, See, Ice,	3 Contrast, Ambition, Men,
White, Write	Union, Work
0 Illegible	2 Energy, Time, Business,
2 Blank	Construction, Factory,
140 Total	Money, Opposites
44 Different Responses	0 Illegible
	1 Blank
	140 Total
	65 Different Responses
WOMAN - SKIRT	
32 Dress	
21 Elouse	
15 Clothes	
9 Clothing	
8 Pretty	
6 Legs	
5 Short	
4 Feminine	
3 Girl, Tight	
2 Beauty, Female, Knee	
0 Illegible	
1 Blank	
140 Total	
39 Different Responses	
	YOLK - EGG
	43 Chicken
	14 Food
	13 Breakfast, White
	12 Shell
	7 Yellow
	4 Hen
	3 Eat, Cook
	2 Fry, Cooking,
	Protein, Runny
	0 Illegible
	0 Blank
	140 Total
	33 Different Responses